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THE DETERMINANTS OF PATIENT SATISFACTION WITH FOOD AND
NUTRITIONAL SERVICES AT YALE-NEW HAVEN HOSPITAL:
A MULTI-METHOD QUALITATIVE CASE STUDY

By

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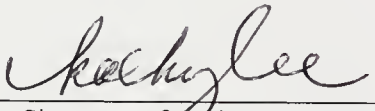
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Executive Summary

INTRODUCTION

In fiscal year 2001, satisfaction scores in the Department of Food and Nutritional Services at Yale-New Haven Hospital (YNHH) were consistently lower than their Connecticut peer comparison group over four quarters. The objective of this thesis was to identify determinants of low meal service scores at YNHH and make recommendations to improve future satisfaction ratings in this area.

METHODS

This was a multi-method qualitative study using direct observation of patient care units (n=8), which represented units with lower, average, and higher satisfaction scores. In addition, observations of the food and nutrition preparation and service processes were performed, and informational interviews were conducted with the key staff (n=21) involved in meal service and delivery. Data on thirteen organizational characteristics were also collected, and trends were assessed to identify common characteristics of the low, average, and higher satisfaction units. An in-depth descriptive analysis of internal and benchmark satisfaction data across quarters was conducted to identify the study sample.

RESULTS

The study identified six major sources of inter-unit variability in satisfaction scores, of which three were related to food and nutrition: 1) diet changes, 2) late trays, 3) percent of patients in their rooms to receive meal trays; and three were related to broader organizational-level factors: 4) patient volume, 5) bed size, and 6) overall hospital satisfaction.

RECOMMENDATIONS

Recommendations for improving satisfaction include: 1) increasing coordination between food and nutrition and the patient care units, 2) increasing the role of PCAs to provide diet explanations during tray passing, and 3) expanding meal service expectations to incorporate hospitality standards and developing strategies to monitor performance. This study reinforces the idea that meeting customer expectations requires better service integration across organizational boundaries because patient attitudes are impacted by a multitude of factors that go beyond the control of individual departments.

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Participants

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1. Introduction

1.1. Problem Statement

Since implementing the Press, Ganey patient satisfaction assessment tool in fiscal year 2001, satisfaction scores have not been impressive for the Department of Food and Nutritional Services at Yale-New Haven Hospital (YNHH), especially when compared to the Connecticut and national comparison groups.

1.2. Objectives of Thesis

In order to understand the reasons for why patient satisfaction scores in food services at YNHH are lower than the Connecticut Peer Group, an in-depth analysis was conducted of the current operations of the Department of Food and Nutritional Services. The goal was to identify ways in which YNHH could improve patient satisfaction with food services in future assessment periods. As such, the primary objectives were:

- To review and describe the data on patient satisfaction with food services during the last fiscal year (October 1, 2000 – September 30, 2001)
- To examine the relationship between organizational characteristics and patient satisfaction scores to understand why meal service scores seem so low on the Connecticut comparison group compared to both previous survey results and the teaching hospital peer group
- To propose data-driven recommendations in order to increase ratings, using the Connecticut Peer Group scores as the benchmark

2. Background

2.1. Description of Problem

YNHH began using a different patient satisfaction assessment tool in the fiscal year beginning October 1, 2000. Press, Ganey is the new tool, and it is an industry standard for assessing patients' satisfaction with services provided by hospitals. First quarter results were not impressive for the Department of Food and Nutritional Services, and subsequent quarters reflected similar results. More specifically, patient satisfaction scores in food services at YNHH were consistently lower than the Connecticut peer comparison group over four quarters. For example, YNHH ranked in the 17th percentile in overall inpatient meals rating (mean score 73.1) in the first quarter compared to the Connecticut comparison group.¹ That is, YNHH performed better than 17% and worse than 83% of the hospitals in Connecticut.

Among approximately twenty-five other local Connecticut hospitals that use Press, Ganey, the Connecticut comparison group includes Greenwich Hospital and Bridgeport Hospital — both of which are affiliated with the Yale New Haven Health System. While all three hospitals are within the same health system, Greenwich Hospital consistently outperforms YNHH, ranking nationally in the 99th percentile in overall patient satisfaction scores.²

While satisfaction scores at YNHH appear to be low compared to other hospitals since implementing Press, Ganey, it does not necessarily mean that YNHH's service quality has decreased. According to Steve Merz, Administrative Director of Facilities Planning and Administrative Services, overall hospital satisfaction has remained about the same at 80% before and after Press, Ganey. The difference is that the old assessment tool only provided raw scores, whereas Press, Ganey provides percentile rankings between three comparison groups

¹ Source: First Quarter Results, FY '01 - Press, Ganey Adult Inpatient Report

² Source: Lynn Charbonneau, Manager of Patient Relations, YNHH

(national database, Connecticut peer group, and teaching hospital peer group). YNHH can now compare its performance to its competitors. The Connecticut peer group was used as the benchmark for this study because it allows YNHH to compare its performance to two of its affiliated hospitals in the Yale New Haven Health System and within the state, since the majority of Connecticut citizens receive hospital services at facilities within one hour of their residence.

Patient satisfaction is a major management objective of the hospital, and therefore, the Department of Food and Nutritional Services is interested in increasing ratings in order to ensure that YNHH meets the performance of, if not outperforms, its competitors and continues to meet the expectations of its customers.

2.2. Implications of Problem

Patient satisfaction scores serve as a marker for how well a hospital is performing in terms of meeting patient needs. While the major function of a hospital is to care for patients' medical and clinical needs, addressing their non-medical needs is becoming increasingly important as healthcare providers continue to focus more attention on consumer-driven factors in healthcare. As patients demand more from their providers of care, hospitals must strive to be more consumer-friendly. This is especially important in a competitive hospital market, where patients' satisfaction with their overall hospital experience can affect hospital rankings in patient care and service areas.

Meal service is one non-medical component that may affect patients' overall satisfaction with hospital services. Further, it is an important area to examine because food and nutrition play an important role in patients' health; diet is related to clinical care since proper diet can be critical to improving the patients' medical conditions and facilitating their recovery.

2.3. Addressing the Problem: Previous Attempts & Results

After reviewing the first quarter Press, Ganey results, the Department of Food and Nutritional Services developed an internal improvement plan for patient satisfaction,³ which included:

- Establishing performance improvement (PI) teams
- Reviewing menu items and meal times
- Revising the breakfast basket program and reviewing alternatives
- Implementing a new Box Lunch program on March 19, 2001 to enhance appearance and quality of products
- Revising Patient Services Managers' tasks to include nursing and patient rounds on a daily basis
- Reviewing and adjusting all temperature levels on all patient trucks to boost temperatures; revising plating techniques on specific menu products to improve temperatures
- Revising curriculum and patient meal delivery standards for patient care associate (PCA) training to ensure core standards are being adhered to
- Incorporating monthly theme meals with upscale menu items such as steak on Valentine's Day
- Initiating tray assessments with Nurse Managers and key unit staff

Of the measures that were taken, only the change in temperature of the food directly improved satisfaction scores during the second quarter. Increasing the temperature settings during the heating process of the tray production process⁴ showed a +0.2 change in temperature ratings, and a complementary +1.6 change in ratings of the quality of the food,⁵ implying that hotter foods taste better.

While the department has implemented the improvement plan and adjusted it as necessary based on customer feedback and Press, Ganey results, Melissa Zelazny, Director of Food and Nutritional Services, says, "the improvements in scores have been minimal." The modest improvements reflect the inherent challenges of meeting customers' non-medical needs. Nevertheless, those needs and customer service issues have to be addressed.

³ Source: Melissa Zelazny, Director, Food and Nutritional Services

⁴ See Section 4.1 for information about the tray production process

⁵ Source: Second Quarter Results, FY '01 - Press, Ganey Adult Inpatient Report

2.4. Description of Press, Ganey Data On Patient Satisfaction

The data reviewed are from Press, Ganey reports and represent the patient satisfaction results for the last fiscal year (October 1, 2000 – September 30, 2001). For the purposes of this project, only the results (according to mean scores) from the adult inpatient and pediatric inpatient units were reviewed in the descriptive analysis of the meals section satisfaction scores.⁶ While the results from adult inpatient units were reported quarterly, results from pediatric inpatient units were reported in four “report periods” because there were not enough responses at the 45% sampling rate⁷ during the first three quarters of FY 2001. The time period for each report period was slightly different from the normal fiscal year so that enough responses could be collected for reporting. As such, the first report period for the pediatric units was from October 1, 2000 to February 28, 2001, the second from March 1 to April 30, the third from May 1 to June 30, and the fourth from July 1 to September 30. The adult inpatient group included twenty units, representing six clinical service lines, whereas the pediatric service line included five units.

Table 1 lists the service lines with their corresponding units.

The scores represent patient satisfaction on four questions related to their meal experience. The ADULT and PEDIATRIC inpatient satisfaction surveys are similar in content for the meals section, and include the following questions:

“If you were placed on a special/restricted diet, how well was it explained?”

“Temperature of the food (cold foods cold, hot foods hot)?”

“Quality of the food?”

The only difference is the last question:

“Courtesy of the person who served your food?” (Adult survey)

“Availability of the kind of food your child likes to eat?” (Pediatric survey)

⁶ See Section 3.2 for an explanation of the descriptive analysis of the meals section satisfaction scores

⁷ Press, Ganey sampling technique

Table 1: Service Lines and Unit Names

Service Line	
Unit	Unit name
Cardiovascular	
4-7	Cardiac Surgery Stepdown
5-3	Cardiac
10-7	Cardiac
5-2	Cardiac (temp. 10-7 after 7/12/01)
General Surgery	
6-4	General Surgery/Trauma
6-5	Plastics/ENT
6-7	General Surgery
7-5	PV/Transplant
Medicine	
5-5	General Medicine
5-7	General Medicine
9-5	Medicine
9-7	Medicine
Neuro/Rehab	
6-3	Neuro Stepdown
7-7	Orthopaedic
10-6	Research
Obstetrics	
10M	Maternity
10MS	Maternity Special Care
11M	Maternity
Oncology	
8ONC	Oncology
9G	Gynecology
Pediatrics	
7-2	School Age (temp. 7AD after 7/12/01)
7-3	Infants/Toddlers
7-4	Research
7AD	Adolescent (temp. 7-2 after 7/12/01)
10-7	(temp. 7AD after 7/12/01)

3. Methods

The procedure used to identify possible areas of improvement for addressing the issue of patient satisfaction with meal service was carried out in four phases:

- 1) Understanding the tray production process
- 2) Descriptive analysis of the Press, Ganey data on patient satisfaction
- 3) Comparing organizational characteristics among an eight-unit sample
- 4) Assessment of organizational characteristics that might be related to unit-specific satisfaction scores

In the following sections, the methodology used to carry out the analysis procedure is described.

3.1. Understanding the Tray Production Process

During the first phase of the project, information collection focused on gaining a greater perspective on the context of the problem. In order to understand one of the main operations of the Department of Food and Nutritional Services, an in-depth walk-through of the tray production process was performed, and a process flow diagram was developed.⁸ Informational interviews were also conducted with twenty-one members of the management team and hospital staff who are involved with the operations of the department and/or meal service and delivery. Section 4.1 gives a brief description of the tray production process along with a summary of information that was gathered during the walk-through.

3.2. Descriptive Analysis of the Meals Section Satisfaction Scores

In phase two, a descriptive analysis of the Press, Ganey meals section satisfaction scores was conducted using Microsoft Excel spreadsheets. **Appendix 2a-d** shows the results of the meals section unit analysis for the ADULT inpatient units, and **Appendix 2e-h** shows the meals section unit analysis for the PEDIATRIC inpatient units. The results were organized by survey question, and the quarterly mean satisfaction scores were summarized for each unit (The PEDIATRIC

⁸ See **Appendix 1: Tray Production Process Flow Diagram**

results were summarized by question and report period). The average mean score over four quarters (over four report periods for PEDS) was obtained for each unit and was then compared to the hospital average (i.e., the internal hospital comparison) and Connecticut peer group average (i.e., the external comparison). The measure of comparison was the numerical deviation from the Connecticut comparison group. This was calculated as the difference between average mean score and the Connecticut average; a more negative deviation indicated a lower-performing unit (lower satisfaction scores). Using this procedure, the inter-unit variability in satisfaction scores was assessed by examining each unit's average score over four quarters deviation from the Connecticut average for each survey question. The statistical significance of the differences between unit's satisfaction scores and the Connecticut average satisfaction scores could not be assessed because satisfaction scores for other individual Connecticut hospitals were not available and the Press, Ganey dataset did not provide a standard deviation for the Connecticut average satisfaction rating. No statistical analyses were performed.

OVERALL DEVIATION

In order to identify the high-performing units versus the low-performing units, the units were ranked from highest to lowest overall deviation from the Connecticut comparison group. The overall deviation is the sum of the individual deviations for each survey question as summarized in the descriptive analysis in Appendix 2a-h. The higher the negative deviation, the lower the satisfaction score compared to the Connecticut benchmark (lower-performing unit). See **Table 2** in section 4.2 for the ranking of units by overall deviations and their corresponding service lines.

SERVICE LINE PERFORMANCE

The performance of each service line was also summarized. The individual unit scores for each question were averaged over four quarters (over four report periods for the PEDIATRIC units), and then averaged across all the units under each service line to obtain the average service

line score for each question.⁹ See **Table 3** in section 4.2 for the average meals section satisfaction scores by service line and survey question. Also shown are priority ratings, which were found by taking the difference between the highest and the lowest scores for each question. Priority ratings show the variability in scores between the highest and lowest scores, where a rating of “1” meant the most deviation. A second rating was given to account for the difference in scores without the PEDIATRIC service line.

3.3. Comparing Organizational Characteristics Among An Eight-Unit Sample

The next phase of the project involved sampling a few units in depth to compare low-performing units to high-performing units. The objective was to examine the relationship between internal organizational characteristics and the satisfaction scores in order to identify potential sources of inter-unit variability in satisfaction scores (according to their deviation from Connecticut scores).

THE EIGHT-UNIT SAMPLE

An eight-unit sample was selected based on their overall deviations from the Connecticut average (see Table 2), and these units were grouped into LOW, AVERAGE, and HIGH satisfaction groups, such that the LOW satisfaction group had the greatest overall deviation from the Connecticut scores (lowest-performing units). **Table 4** lists the units that were selected by their satisfaction level grouping. The two units with the highest and lowest overall deviation from the Connecticut average were selected as well as a few units in between and a pediatric unit to represent all clinical service lines. Unit 10-6 was not included in the selection process even though it was the highest performing unit (deviating 20.3 points higher than the comparison group)¹⁰ because it is a research unit and the characteristics of that unit are different from the other patient care units.

⁹ See **Appendix 2a-h: Descriptive Analysis of Meals Section satisfaction Scores**

¹⁰ See **Table 2**

Table 4. The Eight Unit Sample By Satisfaction Group

SATISFACTION GROUP*		
Overall Deviation ¹	Unit	Service Line
LOW		
-29.2	6-4	General Surgery
-22.9	9-7	Medicine
AVERAGE		
-18.0	4-7	Cardiovascular
-16.7	10M	Obstetrics
-13.7	8ONC	Oncology
-10.5	7AD	PEDS-Adolescents
HIGH		
-2.5	6-3	Neuro-Rehab
0	6-5	General Surgery

* LOW: greatest overall deviation from Connecticut scores

HIGH: least overall deviation from Connecticut scores

¹ Sum of the deviations from the Connecticut averages over four questions on Press, Ganey survey

INTERNAL ORGANIZATIONAL CHARACTERISTICS

Thirteen internal organizational characteristics were identified as potential sources of inter-unit variability in meal service satisfaction scores. The characteristics were grouped into three categories: I) Overall volume & bed statistics; II) Diet statistics; and III) Tray passing process. Data for these characteristics were compiled using records from census reports, dietician's reports, and through unit observations. **Table 5** lists the organizational characteristics and the source of the information.

A table was developed to organize the data on internal organizational characteristics collected for the eight-unit sample (see **Appendix 3**). The next section provides explanations of how the data for each characteristic was obtained and defined.

Table 5. List of Internal Organizational Characteristics That Might Be Linked To Satisfaction Scores

Internal Organizational Characteristics	Data Source¹
<i>OVERALL VOLUME & BED STATISTICS</i>	
1 Volume (Average Daily Census)	Food & Nutrition weekly census reports
2 Bed Size	Food & Nutrition weekly census reports
3 Percent Filled	Food & Nutrition weekly census reports
4 Percent Turnover	Food & Nutrition weekly census reports
5 Average Length of Stay (ALOS)	1st Quarter Performance Summary
<i>DIET STATISTICS</i>	
6 Diet Type	Clinical Nutrition Coordinator
7 Diet Changes	Clinical Nutrition Coordinator
8 Late Trays	Clinical Nutrition Coordinator
<i>TRAY PASSING PROCESS</i>	
9 Number and Percent Trays Passed	Unit observations
10 Number and Percent Patients in Room Receiving Meals	Unit observations
11 Timeliness	Unit observations
12 Tray Passers	Unit observations
13 Delivery Point	Food & Nutrition Staff

¹ All data are from fiscal year 2002

EXPLANATION OF INTERNAL ORGANIZATIONAL CHARACTERISTICS

OVERALL VOLUME AND BED STATISTICS

1. Volume (Average Daily Census)

The volume was found by averaging the daily census of patient volume over two weeks in November (11/3/01 to 11/16/01).

2. Bed Size

Bed size is a static number that represents the number of beds on each unit (from “beds in use” data in census reports).

3. Percent Filled

This percentage represents the average number of beds that are in use on each unit and was determined by dividing the volume by the bed size.

4. *Percent Turnover*

This was defined as the daily percent turnover on each unit, averaged over a two-week period. Average daily percent turnover was calculated by taking the sum of admissions, transfers, discharges, and deaths on each unit over a two-week period (in November), and dividing it by the total number of beds on each unit over a two-week period. The total number of beds is the number of beds on each unit from the “beds in use” data in the census reports multiplied by 14 (for the 2-week period).

5. *Average Length of Stay (ALOS)*

Average length of stay is the average number of days patients are hospitalized. The numbers shown are the actual FY '02 data from the first quarter performance summary details. The ALOS was given for service line (not individual units), with units under the same service line having the same ALOS.

DIET STATISTICS

6. *Diet Type*

The type of diets correspond to the type of foods patients can or cannot eat based on their diet type. The numbers represent typical service at one meal, and were obtained by a direct count of the three types of diets (regular, modified, NPO/liquid) for every patient on each unit during one point in the day. See **Appendix 4** for examples of diet types.

7. *Diet Changes*

The daily number of diet changes reflects the number of times patients on a specific floor have to adjust their diets to comply with testing and procedures for their medical condition. The numbers were obtained through a direct count of orders via the “Diet Order Listings” and requisitions, cancellations, transfers, etc. from the CCSS system.

8. *Late Trays*

Late trays are meals that are delivered after the regular meal service hours. The numbers

were obtained by a direct count of the “Late Tray” tally sheets over one week in November (11/3/01 – 11/9/01).

TRAY PASSING PROCESS

The data for the next five organizational characteristics were obtained through unit observations. See “UNIT OBSERVATIONS” for an explanation of how the observations were conducted (next section).

9. Percent Trays Passed

This is the percentage of total trays delivered onto units over two meals that were actually passed to patients, as observed on the units.

10. Percent Patients in Room Receiving Meals

This is the percentage of total trays passed over two meals in which patients were in their rooms to receive their trays. It also captures the number of patients who were not in their rooms during meal service, which may be a source of dissatisfaction.

11. Timeliness

Timeliness in minutes included the wait time (time between truck delivery and when tray passing began) and the tray passing time (start to finish; the end was noted when the last tray was passed), and each component was averaged over two meals for each unit.

12. Tray Passers

The title of the person(s) passing trays on the units was recorded. Under the Food and Nutrition Services Overview and Performance Expectations for the Patient Care Units (see **Appendix 5**), tray passing is supposed to be the responsibility of the Patient Care Associates (PCAs) on each unit.

13. Delivery Point

This is the physical location of meal trucks prior to delivery onto the patient care units. The South Pavillion (SP) and West Pavillion (WP) are satellite kitchens located by the patient

care units. The Main Kitchen (MK) is located in the basement of the hospital.

UNIT OBSERVATIONS

Unit observations were conducted on the eight-unit sample to gather data on the tray passing process for the organizational characteristics table in Appendix 3. Observations were conducted between February and March 2002, during normal meal service hours (Breakfast: between 7:30 – 8:30AM; Lunch: between 11:30AM – 12:30PM; Dinner: between 4:45 – 6PM). All eight units were observed during a lunch meal; each unit was also randomly selected for either a breakfast or dinner observation, resulting in each of the eight units being observed for two meals – either breakfast and lunch or lunch and dinner – but the observations did not necessarily occur on the same day for each of the two meals. A total of twenty-four unit observations were performed, but only sixteen of those observations were reported in Appendix 3. Eight observations were disregarded because of practice runs or incomplete data due to arriving on a unit after the meal trucks had already been delivered. **Appendix 6** shows the form that was used to track tray passing on the units. Observations started when the meal trucks arrived onto the units and ended when the last tray was passed to patients. The objective was to identify sources of inter-unit variability beyond what can be determined in the floor and diet statistics. As such, the quality of service was an important area to look into. See section 4.5 for a summary of observations that were made on the units.

The information collected on the tray passing process was used to complete Appendix 3, along with the data collected for overall volume and bed statistics, as well as diet statistics. After the table was completed, the organizational characteristics for each unit were summarized in three tables according to the categories in which they belong (see **Tables 6-8** in section 4.3). A descriptive and qualitative analysis was provided on the most salient similarities and differences between the thirteen organizational characteristics as they relate to the unit satisfaction scores.

SUPPLEMENTARY ANALYSIS

Reasons for Trays Not Passed On Units

In addition to recording the number of trays that were/were not passed on the units, observations were made regarding why some trays were not passed on the units. **Table 12** in section 4.3 summarizes the most common reasons for trays not being passed on the units. For every tray that was not passed on each unit throughout the sixteen unit observations, a reason was noted. The most common reasons are listed in the table and a tally was kept for each unit. The percent of trays not passed due to each specific reason was calculated by taking the total trays not passed for each specific reason divided by the total number of trays delivered on the eight units throughout the sixteen unit observations. Using this procedure, the percent of trays not passed due to each reason was determined. The table also shows the percent of total trays not passed, which was determined by taking the total trays not passed divided by the total trays delivered on the eight units. The data on numbers of trays passed and delivered were from the observations recorded in Appendix 3.

Potential Cost Savings From Waste Reduction In Meal Service

The total percent of trays not passed represents a waste reduction opportunity in meal service. Using the information on number of trays delivered, number of trays passed, and number of trays not passed from Table 12, the percent waste was calculated. Percent waste was determined by taking the daily number of trays not passed divided by the total daily number of trays delivered on the eight units throughout the sixteen observations. The daily percent waste on each unit as well as the total daily percent waste was determined. The yearly percent waste on each unit was calculated by multiplying the daily number of trays not passed on each unit by 365 and then dividing each by the total number of trays delivered on the eight units annually. Basically, the total percent of trays not passed equals the total percent waste. **Table 13** in section 4.3 shows the calculations for percent waste and the potential cost savings from waste reduction, assuming that

the cost of an average meal tray was \$2.50 in fiscal year 2002.

3.4. Assessing the Relationship Between Organizational Characteristics and Satisfaction Scores

ASSESSMENT AMONG LOW, AVERAGE, AND HIGH SATISFACTION GROUPS

Next, an assessment of the relationship between the organizational characteristics and satisfaction scores was performed. The objective was to find indicators for patient satisfaction by identifying trends in the data. This was done by comparing the average values of the organizational characteristics among the LOW, AVERAGE, and HIGH satisfaction groups. Relationships between organizational characteristics and patient satisfaction were noted by inspection; statistical associations were not tested due to the small sample size ($n = 8$) and thus limited power to detect significant associations in this sample. See **Table 14** in section 4.4 for a summary of the descriptive analysis among the LOW, AVERAGE, and HIGH satisfaction groups.

ASSESSMENT BETWEEN LOWEST AND HIGHEST SATISFACTION UNITS

After the analysis of trends was made among the LOW, AVERAGE, and HIGH groups was made, a specific comparison between the LOWEST and HIGHEST satisfaction units was made to further elucidate the possible relationships between organizational characteristics and satisfaction scores. Units 6-4 and 6-5 had the least satisfied and most satisfied patients, respectively. Since both units are under the General Surgery service line, comparing the two units provided further insight into the differences between a low-performing unit and a high-performing unit. See **Table 16** in section 4.4 for the descriptive analysis between the LOWEST and HIGHEST satisfaction units.

OVERALL HOSPITAL SATISFACTION

It was thought that any trends in the data between organizational characteristics and satisfaction scores in meal services might be related to overall hospital satisfaction, so this statistic was also

included in Tables 14 and 16. See **Table 15** in section 4.4 for the overall hospital satisfaction in fiscal year 2001 for each of the units in the eight-unit sample, as reported by Press, Ganey. Table 15 also summarizes the average mean scores in overall hospital satisfaction over four quarters for each of the satisfaction groups. The average group score was determined by taking the average of the average scores for the units that belonged in each satisfaction group. Relationships between overall hospital satisfaction and unit specific satisfaction scores in meal service were noted by inspection.

4. Presentation and Analysis of Results

4.1. Information About The Tray Production Process

From the in-depth walk-through of the tray production process and through informal interviews with Food and Nutritional Services staff, the following information was obtained about the tray production process.

Meal trays are prepared using an Advanced Food System (AFS), also called the “Cook-and-Chill” system. This system replaced the traditional tray-line system and was implemented in April of 1999. Like the name implies, food is prepared ahead of time and chilled until it is taken out for the tray-assembly line. The number of trays prepared each day is based on a forecast of the total census, which assumes that the hospital runs on a full census. On average, approximately 550 trays are prepared for each meal (breakfast, lunch, dinner).

The benefits of the system are that it cuts back on tray production time since some parts of the meal order are already prepped, and the meals have modified recipes that maintain the right levels of moisture and consistency in order to suit the conduction system (translates to better food safety and quality).¹¹ Furthermore, it allows for substantial labor cost reduction.

After reviewing the information collected through observations and interviews regarding the tray production process, some potential sources of error were identified. These include:

- Manual programming of the menu-minder at the end of the tray-assembly line to indicate which items need to be hot or cold
- Insufficient communications between dietetic technicians and patients regarding menu selection
- Management of the “critical change time” – correctly changing the meal tray to reflect meal order changes right before the re-therm process (reheating food items that were previously chilled)
- Timing of tray passing to patients after food truck is delivered to unit

¹¹ Source: Gita Dabril, RD, Operations Manager, Patient-Production Services, Department of Food and Nutritional Services

- Over- or under- forecasting the daily census

These potential sources of error can be categorized into system problems (e.g., manual programming) and communication problems (e.g., insufficient communications regarding menu selections), and the most salient problems were further elucidated in the next few phases of the present investigation.

4.2. Descriptive Analysis of the Meals Section Satisfaction Scores

The descriptive analysis of the meals section satisfaction scores showed that in general, most of the unit averages for each question deviated negatively from the Connecticut averages over four quarters, confirming that meal services at YNHH did indeed perform below the Connecticut average.

OVERALL DEVIATION IN SATISFACTION SCORES

Table 2 shows the ranking of each unit's patient satisfaction scores by their overall deviation from the Connecticut average, where a higher overall negative deviation meant lower satisfaction scores. For the ADULT inpatient scores, overall deviation ranged from -29.2 (unit 6-4/General Surgery) to +20.3 (unit 10-6/Neuro/Rehab), with the most negative indicating the most low-performing unit compared to Connecticut hospitals. Unit 10-6, a research unit, was the only unit that deviated positively from the Connecticut averages, indicating that this unit performed much better than the Connecticut hospitals in meal service. The PEDIATRIC inpatient scores varied from -39.4 (unit 10-7, which was temporarily the adolescent unit after 7/12/01) to -3.6 (unit 7-2/ School-Age). The overall deviations showed that except for two units (6-5/General Surgery and 10-6/Neuro-Rehab), all the ADULT and PEDIATRIC inpatient units performed below the Connecticut benchmark.

**Table 2. Ranking of Patient Satisfaction Scores By Overall Deviation¹
Press, Ganey Results, YNHH, FY 2001**

ADULT INPATIENT

Rank ²	Unit	Overall Deviation (Avg - CT)	Overall Deviation (Avg - Hospital)	Service Line
1	6-4	-29.2	-16.4	General Surgery
2	9-7	-22.9	-10.1	Medicine
3	7-7	-22.4	-9.6	Neuro/Rehab
4	6-7	-20.0	-7.2	General Surgery
5	10MS	-19.9	-7.1	Obstetrics
6	7-5	-18.7	-5.9	General Surgery
7	4-7	-18.0	-5.2	Cardiovascular
8	10M	-16.7	-3.9	Obstetrics
9	10-7	-15.3	-2.5	Cardiovascular
10	5-7	-14.4	-1.6	Medicine
11	8ONC	-13.7	-0.9	Oncology
12	5-5	-12.0	0.8	Medicine
13	5-2	-7.1	5.7	Cardiovascular
14	11M	-6.9	6.0	Obstetrics
15	9G	-6.6	6.2	Oncology
16	5-3	-5.2	7.6	Cardiovascular
17	9-5	-4.5	8.4	Medicine
18	6-3	-2.5	10.3	Neuro/Rehab
19	6-5	0.0	12.8	General Surgery
20	10-6	20.3	33.1	Neuro/Rehab (Research)

PEDIATRIC INPATIENT

Rank	Unit	Overall Deviation (Avg - PG Avg)	Overall Deviation (Avg - Hospital)	Unit Name
1	10-7	-39.4	-32.8	temp. 7AD
2	7-3	-12.3	-5.6	Infants/Toddlers
3	7AD	-10.5	-3.9	Adolescents
4	7-4	-4.4	2.3	Research
5	7-2	-3.6	3.1	School Age

¹ Overall deviation is sum of individual deviations between average score and Connecticut comparison group across four questions on Press, Ganey survey

² From high to low deviation (lower-performing to higher performing units)

SERVICE LINE PERFORMANCE

Table 3 shows the meals section average satisfaction scores by service line. By inspection, the average satisfaction scores for question 3 (quality of the food) appeared to be consistently low across all service lines, with an average of 66.8. Quality had the lowest ratings and courtesy

(question 4) had the highest ratings, and this result was consistent for each of the service lines.

The priority ratings show that the difference between the highest and lowest scores was greatest for question 4 (courtesy), meaning that the patient satisfaction scores regarding courtesy of staff varied the most among service lines. The ratings changed when the PEDIATRIC service line was not considered, which may be because question 4 on the pediatric survey (availability of the type of food child likes to eat) is different from the adult survey (courtesy of the person serving food).

**Table 3. Meals Section Average Satisfaction Scores¹ By Service Line
Press, Ganey Results - FY: 10/1/2000-9/30/2001**

Service Line Units	Question 1 Explanation	Question 2 Temperature	Question 3 Quality	Question 4 Courtesy *
Cardiovascular 4-7, 5-3, 10-7, 5-2	69.0	74.0	67.5	81.2
General Surgery 6-4, 6-5, 6-7, 7-5	68.1	72.7	67.2	79.5
Medicine 5-5, 5-7, 9-5, 9-7	70.1	73.1	67.6	79.8
Neuro/Rehab 6-3, 7-7, 10-6	75.4	75.0	68.6	81.6
Obstetrics 10M, 10MS, 11M	76.0	74.4	63.0	78.1
Oncology 8ONC, 9G	73.8	72.6	66.0	82.0
Pediatrics 7-2, 7-3, 7-4, 7AD, 10-7	74.8	75.4	67.6	73.0*
Average (all service lines)	72.5	73.9	66.8	80.4
Difference (HI - LO score)²	7.9	2.8	5.6	9.0
Priority Rating³	2	4	3	1
Difference (HI - LO score)⁴	7.9	2.4	5.6	3.9
Priority Rating⁵	1	4	2	3

¹ Scores represent average service line mean scores over four quarters for each question

² All service lines

³ Variability between highest and lowest score among all service lines; 1 = greatest

⁴ Without PEDS service line

⁵ Variability between highest and lowest score without PEDS service line

*Question 4 on the PEDIATRIC survey asks about the availability of food child likes to eat

Without the PEDIATRIC service line, the priority ratings changed to question 1 (explanation of special diet) differing the most between the highest and lowest scoring service lines.

The Neuro-Rehab service line scored the highest on two of the four questions (temperature and quality) compared to the other service lines (without PEDIATRICS). This result may have been biased upward since the research unit (10-6) generally had scores that deviated positively from the Connecticut averages (see Appendix 2a-d). Since patients on 10-6 generally get boxed meals, their experience with meal service may be different compared to the patients on the other patient care units. Separating 10-6 for this analysis would have driven the average scores downward for the Neuro-Rehab service line.

4.3. Comparing Organizational Characteristics Among An Eight-Unit Sample

The data gathered on the organizational characteristics for the eight-unit sample are summarized here in three parts according to the category in which the characteristics belong:

- I) Overall volume and bed statistics
- II) Diet statistics
- III) Tray passing process

A descriptive and qualitative analysis of the characteristics and their possible link to satisfaction scores is provided in each part.

I. OVERALL VOLUME AND BED STATISTICS

Table 6 summarizes the data on overall volume and bed statistics.

- *Volume (Average Daily Census)*

The average daily census (ADC) was lowest for units 6-5/General Surgery (16.86) and 7AD/Adolescents (18.64) and highest for unit 9-7/Medicine (28.57). The low ADC for 6-5 may have contributed to the unit scoring the best in patient satisfaction since staff have fewer to care for, which may lead to better care. Likewise, the higher volume on 9-7 may indicate a busier unit and nurses may not be as attentive to individual patient needs.

- *Bed Size*

Units 7AD/Adolescents and 6-5/General Surgery also have the least number of beds on each floor (18 and 20, respectively), whereas 9-7/Medicine has the most number of beds (34). 8ONC also has 34 beds, but this number includes seven beds from the 8BMT/Bone-Marrow Transplant wing. Since the meal trays come up to the floor on the same truck, however, the beds for 8BMT are included in the total for 8ONC. Likewise, 18 of the 28 beds for unit 10M/Obstetrics (Maternity) are for patients in the 10MS/Obstetrics (Maternal Special Care) wing of the unit, but these beds are also included in the count for 10M since their meals come up on the same truck.

Table 6. Overall Volume and Bed Statistics By Satisfaction Group

GROUP*	Overall Deviation¹	Unit	Service Line	Volume (ADC)	# Beds²	Percent Filled	Percent Turnover³	ALOS⁴
LOW								
	-29.2	6-4	General Surgery	21.07	24	87.8%	51%	5.80
	-22.9	9-7	Medicine	28.57	34	84.0%	34%	5.85
<i>Average</i>				<i>24.82</i>	<i>29</i>	<i>85.9%</i>	<i>43%</i>	<i>5.83</i>
AVERAGE								
	-18.0	4-7	Cardiovascular	20.64	25	82.6%	44%	5.80
	-16.7	10M	Obstetrics	22.64	28	80.9%	52%	3.18
	-13.7	8ONC	Oncology	20.21	34	59.5%	21%	5.85
	-10.5	7AD	PEDS-Adolescents	18.64	18	103.6%	56%	4.77
<i>Average</i>				<i>20.53</i>	<i>26.25</i>	<i>81.7%</i>	<i>43%</i>	<i>4.90</i>
HIGH								
	-2.5	6-3	Neuro-Rehab	22.57	24	94.0%	38%	6.51
	0	6-5	General Surgery	16.86	20	84.3%	46%	5.80
<i>Average</i>				<i>19.72</i>	<i>22</i>	<i>89.2%</i>	<i>42%</i>	<i>6.16</i>
<i>Average (8 units)</i>				<i>21.40</i>	<i>25.88</i>	<i>84.6%</i>	<i>43%</i>	<i>5.45</i>

* LOW to HIGH Satisfaction Group: greatest to least overall deviation from Connecticut scores

¹ Sum of the deviations from the Connecticut averages over four questions on Press, Ganey survey

² 10M includes 18 beds for 10MS; 8ONC includes 7 beds for 8BMT

³ Daily turnover averaged over a two-week period

⁴ 1st quarter, FY '02

- *Percent Filled*

Of the total number of beds that are available on each unit, all but one of the units did not fill to full capacity. Unit 7AD/Adolescents was the only unit, on average, with a 3.6% overcapacity. The unit with the lowest percent filled was 8ONC/Oncology.

- *Percent Turnover*

The average percent turnover among all the units was 43% and the range between all the units was 21% to 56%. This meant that on average, 43% of beds got turned over on a daily basis (for the 8 unit sample). Unit 8ONC/Oncology had the lowest percent turnover (21%) compared to the other units, which is expected since oncology patients are generally more sick compared to other patient types.

- *Average Length of Stay (ALOS)*

The ALOS was given for service line (not individual units), with units under the same service line having the same ALOS. The ALOS ranged from 3.18 days to 6.51 days. Unit 10M/Obstetrics had the lowest ALOS (3.18 days), whereas 6-3/Neuro-Rehab had the longest ALOS (6.51). Three of the units (6-4/General Surgery, 4-7/Cardiovascular, and 6-5/General Surgery) grouped under the General Surgery service line had the same ALOS of 5.80 days. Units 9-7/Medicine and 8ONC/Oncology, were grouped under the Medicine service line and had ALOS of 5.85 days.

II. DIET STATISTICS

Table 7 summarizes the data on diet statistics.

- *Diet Type*

The maternity floor (10M/Obstetrics) had the highest percentage of patients on regular diets (79.2%). This is expected since patients on this floor are generally healthier (as implied by their relatively short ALOS of 3.18 days). The unit with the fewest patients on regular diets was 9-7/Medicine (14.3%), but it had the highest percentage of patients on modified/restricted diets compared to the other units (71.4%). Unit 6-4/general Surgery had the highest percentage of

Table 7. Diet Statistics By Satisfaction Group

GROUP*	Overall Deviation ¹	Unit	Service Line	Diet Type (%/meal)		Diet Changes (#/day)	Late Trays (#/week)					
				Regular	Modified		NPO/Liquid	Breakfast	Lunch	Dinner	Total/week	
LOW												
	-29.2	6-4	General Surgery	30.0%	10.0%	20	13	5	10	28		
	-22.9	9-7	Medicine	14.3%	71.4%	15	18	26	15	59		
Average				22.2%	40.7%	17.5	15.5	15.5	12.5	43.5		
AVERAGE												
	-18.0	4-7	Cardiovascular	31.8%	63.6%	6	5	2	5	12		
	-16.7	10M	Obstetrics	79.2%	12.5%	6	10	3	14	27		
	-13.7	8ONC	Oncology	37.5%	41.7%	9	6	3	10	19		
	-10.5	7AD	PEDS-Adolescents	42.1%	26.3%	6	5	4	18	27		
Average				47.7%	36.0%	6.8	6.5	3.0	11.8	21.3		
HIGH												
	-2.5	6-3	Neuro-Rehab	40.0%	30.0%	6	8	5	17	30		
0		6-5	General Surgery	17.6%	47.1%	11	8	4	8	20		
Average				28.8%	38.6%	8.5	8.0	4.5	12.5	25.0		
Average (8 units)				36.6%	37.8%	9.9	9.1	6.5	12.1	27.8		

* LOW to HIGH Satisfaction Group: greatest to least overall deviation from Connecticut scores

¹ Sum of the deviations from the Connecticut averages over four questions on Press, Ganey survey

patients on NPO/liquid diets (60%). Patients on NOP/Liquid diets cannot select their own menus (i.e., patients on NPO cannot eat at all), and this may be a reason for unit 6-4 having the highest dissatisfaction. The diet types represented on each of the units were characteristic of the patient population on those units.

- *Diet Changes*

Unit 6-4/General surgery had the highest number of diet changes per day (20) followed by 9-7/Medicine with 15 changes. Since the overall meal service patient satisfaction scores of these two units deviate most from the CT comparison group, this variable seems to be a good indicator for patient satisfaction. It seems that the more diet changes there were, the more dissatisfied the patients were. This may be due to patients being uninformed of their diet change, causing them to be confused about not receiving a tray, receiving the wrong tray, or one that they did not select. Explanation of restricted diets was one of the questions asked on the patient satisfaction survey, and Table 3 showed that there was greatest variability between the highest and lowest score for this item among the ADULT inpatient service lines.

- *Late Trays*

Late trays are meals that are delivered after the regular meal service hours and may be the result of several reasons including: getting new admissions, patients returning from a test or procedure and ordering a new meal upon their return, or having to change a meal order. Unit 9-7/Medicine had the highest number of total late trays per week (59), whereas 4-7/Cardiovascular had the least (12). The average number of late trays per week over all units was 27.8 trays.

III. TRAY PASSING PROCESS

Table 8 summarizes the data obtained from the unit observations on the tray passing process.

Information about tray passers and delivery point were left off of the table but will be included in this discussion.

Table 8. Tray Passing Process Statistics By Satisfaction Group

GROUP*			% Trays % Pts In		Timeliness (minutes)		
Overall Deviation ¹	Unit	Service Line	Passed	Rooms	Wait Time ²	Tray Pass ³	Total Time
LOW							
-29.2	6-4	General Surgery	71.4%	95.0%	4.0	15.0	19.0
-22.9	9-7	Medicine	96.4%	88.9%	5.5	11.0	16.5
<i>Average</i>			<i>83.9%</i>	<i>92.0%</i>	<i>4.8</i>	<i>13.0</i>	<i>17.8</i>
AVERAGE							
-18.0	4-7	Cardiovascular	89.5%	97.1%	6.5	19.0	25.5
-16.7	10M	Obstetrics	85.4%	97.1%	8.0	13.5	21.5
-13.7	8ONC	Oncology	87.3%	100.0%	4.5	12.0	16.5
-10.5	7AD	PEDS-Adolescents	79.4%	88.9%	20.5	17.0	37.5
<i>Average</i>			<i>85.4%</i>	<i>95.8%</i>	<i>9.9</i>	<i>15.4</i>	<i>25.3</i>
HIGH							
-2.5	6-3	Neuro-Rehab	84.6%	93.9%	5.0	13.5	18.5
0	6-5	General Surgery	85.2%	100.0%	4.0	13.0	17.0
<i>Average</i>			<i>84.9%</i>	<i>97.0%</i>	<i>4.5</i>	<i>13.3</i>	<i>17.8</i>
<i>Average (8 units)</i>			<i>84.9%</i>	<i>95.1%</i>	<i>7.3</i>	<i>14.3</i>	<i>21.5</i>

* LOW to HIGH Satisfaction Group: greatest to least overall deviation from Connecticut scores

¹ Sum of the deviations from the Connecticut averages over four questions on Press, Ganey survey

² Time between truck delivery to start of tray passing

³ From start to finish (first tray passed to last tray passed)

NOTE: All data in table represent the average over two meals

- Percent Trays Passed*

Of the total trays delivered onto units over two meals, the unit with the lowest percentage of trays actually passed to patients was 6-4/General Surgery (71.4%) and the unit with the highest was 9-7/Medicine (96.4%). Percentage of trays passed does not appear to be a good indicator since no trend is found between percent trays passed and patient satisfaction (both 6-4 and 9-7 are the two units with the highest overall deviation but one has lowest percentage of trays passed whereas the other has the highest percentage).

- Percent Patients in Room Receiving Meals*

Of the total trays passed over two meals, more than 90% of patients were in their rooms to receive meals on six of the units (6-4/General Surgery, 4-7/Cardiovascular, 10M/Obstetrics, 8ONC/Oncology, 6-3/Neuro-Rehab, and 6-5/General Surgery), with 8ONC and 6-5 having 100%

patient presence during meal time. On units 9-7/Medicine and 7AD/Adolescents, only approximately 89% of patients were in their rooms to receive meals. Whether or not patients were in their rooms to consume their meals during meal service may affect patient satisfaction scores negatively since it exacerbates the problem of meals sitting out for long periods of time, thereby contributing to patients assessment of the temperature of the food. The most common reason cited by floor staff for patients not being in their rooms was that they were out for a test or procedure.

- *Timeliness*

Table 9 summarizes the timeliness data for each of the sixteen unit observations (each unit was observed twice). On average, the meal trucks usually waited between 4 to 8 minutes on the units before someone began the tray passing routine. The exception was unit 7AD/Adolescents, which had an unusually long average wait time of 20.5 minutes. On average, five of the eight units met the meal service expectation¹² of passing the trays within five minutes of food truck arrival on the units. In general, the wait time was shorter than the actual tray passing time. The average tray passing time on the units was 14.3 minutes. 9-7/Medicine and 8ONC/Oncology both had the shortest average total time of 16.5 minutes, while 7AD had the longest average total time of 37.5 minutes.

- *Tray Passers*

Table 10 shows the number and title of tray passers on the eight units over the sixteen observations. Both the number and the title of persons passing tray varied by unit and by meal. Most of the units used between one to three Patient Care Associates (PCAs) to pass out trays, while 7AD/Adolescents combined the use of a PCA with other floor staff such as an Environmental Associate (EA) and a student nurse. During one meal (breakfast) on 10M, the RNs passed out trays because there were no PCAs on the unit that morning. However, both the Business Associate (BA) and the RNs said that it was very uncharacteristic that RNs would be

¹² See **Appendix 5: Patient Care Unit Food and Nutrition Services Overview and Performance Expectations**

Table 9. Timeliness Of The Tray Passing Process On The Eight Units

Unit	Meal ¹	Wait time ²	Tray pass ³	Total Time (min)
6-4	L	3	10	13
6-4	D	5	20	25
Average		4	15	19
9-7	B	5	15	20
9-7	L	6	7	13
Average		5.5	11	16.5
4-7	L	12	14	26
4-7	D	1	24	25
Average		6.5	19	25.5
10M	B	13	20	33
10M	L	3	7	10
Average		8	13.5	21.5
8ONC	B	4	12	16
8ONC	L	5	12	17
Average		4.5	12	16.5
7AD	L	28	14	42
7AD	D	13	20	33
Average		20.5	17	37.5
6-3	L	5	14	19
6-3	D	0	13	13
Average		5	13.5	18.5
6-5	B	4	11	15
6-5	L	0	15	15
Average		4	13	17
Average (8 units)		7.3	14.3	21.5

¹ (B, L, D): Breakfast, Lunch, Dinner

² Time between truck delivery to start of tray passing (minutes)

³ From start to finish (first tray passed to last tray passed) in minutes

Source: Unit observations; each unit observed twice

passing trays. 8ONC usually used 3 PCAs and tended to have the most PCAs on the unit (between 6-8) due to the high level of skill needed to care for patients on this unit (i.e., oncology patients need to be monitored regularly). From the Table 10, it seemed that units that were consistent in using 2 PCAs at each meal had higher satisfaction (i.e., units 6-3 and 6-5). Since PCAs are responsible for passing trays on the units, they are trained to do the job, and so they would be more familiar with the routine than other floor staff. Units that varied their tray passers

Table 10. Number and Title of Tray Passers On The Eight Units

GROUP*				
Overall Deviation ¹	Unit	Meal ²	Tray Passers	
LOW				
-29.2	6-4	L	2 PCAs	
		D	1 PCA	
-22.9	9-7	B	2 PCAs	
		L	1 PCA	
AVERAGE				
-18.0	4-7	L	1 PCA	
		D	2 PCAs	
-16.7	10M	B	2 RNs	
		L	2 PCAs	
-13.7	8ONC	B	3 PCAs	
		L	3 PCAs	
-10.5	7AD	L	1 PCA, 1 student nurse	
		D	1 PCA, 1EA	
HIGH				
-2.5	6-3	L	2 PCAs	
		D	2 PCAs	
0	6-5	B	2 PCAs	
		L	2 PCAs	

* LOW to HIGH Satisfaction Group: greatest to least overall deviation from Connecticut scores

¹ Sum of the deviations from the Connecticut averages over four questions on Press, Ganey survey

² (B,L,D): Breakfast, Lunch, Dinner; each unit was observed over two meals

may be more disorganized or the staff may be busier, both of which may have affected satisfaction ratings on those units.

Furthermore, when Tables 9 and 10 were combined to show the number and title of tray passers vs. timeliness by individual unit and meal over the sixteen observations (see **Table 11**), the table showed that average wait time was shortest for units that used 2 PCAs (2.6 minutes). Having two PCAs pass out trays also minimized the average total time (16.3 minutes), whereas having more variability in tray passers resulted in longer average total times (36 minutes). Tray passing

**Table 11. Number and Title of Tray Passers vs Timeliness (minutes)
By Individual Unit and Meal**

Unit	Meal ¹	Tray Passers	Wait time ²	Tray pass ³	Total Time (min)
6-4	D	1 PCA	5	20	25
9-7	L	1 PCA	6	7	13
4-7	L	1 PCA	12	14	26
Average			7.7	13.7	21.3
6-4	L	2 PCAs	3	10	13
9-7	B	2 PCAs	5	15	20
4-7	D	2 PCAs	1	24	25
6-3	L	2 PCAs	5	14	19
6-3	D	2 PCAs	0	13	13
6-5	B	2 PCAs	4	11	15
6-5	L	2 PCAs	0	15	15
10M	L	2 PCAs	3	7	10
Average			2.6	13.6	16.3
8ONC	B	3 PCAs	4	12	16
8ONC	L	3 PCAs	5	12	17
Average			4.5	12	16.5
7AD	L	1 PCA, 1 student nurse	28	14	42
7AD	D	1 PCA, 1EA	13	20	33
10M	B	2 RNs	13	20	33
Average			18	18	36

¹ (B,L,D): Breakfast, Lunch, Dinner

² Time between truck delivery to start of tray passing (minutes)

³ From start to finish (first tray passed to last tray passed) in minutes

Source: Unit observations; each unit observed twice

seemed to be more efficient with two PCAs, implying that PCAs were more familiar with the routine than other floor staff. However, longer times may also be due to the volume and size of the units since higher volumes may contribute to the time it takes to complete tray passing. On the other hand, shorter tray passing times may also mean that servers were rushing through the routine and not taking the time to set patients up or help them with their meals. While the table shows that there may be some relationship between trays passers and timeliness, the time spent with patients on these units may be a better indicator of the difference in satisfaction levels since timeliness here does not necessarily reflect the way the trays are passed or the courtesy of the

persons passing the trays.

- *Delivery Point*

This is the physical location of meal trucks prior to delivery onto units. Four units had meal trucks sent from the South Pavillion (SP) satellite kitchen (6-4/General Surgery, 7AD/Adolescents, 6-3/Neuro-Rehab, and 6-5/General Surgery), while three units had trucks delivered from the West Pavillion (WP) satellite kitchen (4-7/Cardiovascular, 10M/Obstetrics, and 8ONC/Oncology).¹³ Unit 9-7/Medicine was the only one delivered from the Main Kitchen (MK). While the satellite kitchens are located near the delivery sites, the main kitchen is in the basement level of the hospital. The distance from the main kitchen to 9-7 may have contributed to the higher variation in scores on this unit. However, delivery site does not seem to be a major source of variation since the lowest-performing unit (6-4) and the highest-performing unit (6-5) – both General Surgery service line – have meal trucks originating from the SP. Delivery times for each meal vary by location.

SUPPLEMENTARY ANALYSIS

Reasons for Trays Not Being Passed

Table 12 shows some of the reasons why trays are not passed, as observed on the units. Of the total number of trays delivered among the eight units over sixteen meals, 4.5% of the trays were not passed because patients did not want the tray. The next common reason for non-passing of trays was due to patient discharges (3.8%). Not wanting the meal may reflect dissatisfaction for the meal or indifference due to patients not feeling well enough to consume a meal, which may also affect patient satisfaction scores.

Potential Cost Savings From Waste Reduction In Meal Service

The percent of trays that are not passed on a unit represents a waste reduction opportunity.

Table 13 shows the daily and yearly percentage of trays wasted on each unit and the potential

¹³ See Appendix 3: Internal Organizational Characteristics

Table 12. Reasons for Trays Not Being Passed On Units (Observed)

Reasons for Non-Passing	6-4	9-7	4-7	10M	8ONC	7AD (10-7)	6-3	6-5	Total	Percent ²
1. Patient did not want tray	2	-	1	-	5	2	1	2	13	4.5%
2. Patient discharged	3	-	1	4	-	2	1	-	11	3.8%
3. Patient cannot eat (NPO); hold	1	1	-	2	1	1	-	2	8	2.8%
4. Extra tray	-	-	-	-	1	2	3	-	6	2.1%
5. Don't know	1	-	1	-	-	-	1	-	3	1.0%
6. Wrong order	-	-	1	-	-	-	-	-	1	0.3%
7. Patient in ICU	1	-	-	-	-	-	-	-	1	0.3%
Number trays not passed % trays not passed	8	1	4	6	7	7	6	4	43	14.8%
Number trays passed % trays passed	20	27	34	35	48	27	33	23	247	85.2%
Number trays delivered	28	28	38	41	55	34	39	27	290	100.0%

¹ From most to least observed reasons over 16 unit observations (2 meals on each unit)

² Percent of the total trays delivered

Table 13. Potential Cost Savings From Waste Reduction in Meal Service at YNH

Unit	# trays delivered ¹	# trays passed	# trays not passed	% waste ²
6-4	28	20	8	2.8%
9-7	28	27	1	0.3%
4-7	38	34	4	1.4%
10M	41	35	6	2.1%
8ONC	55	48	7	2.4%
7AD (10-7)	34	27	7	2.4%
6-3	39	33	6	2.1%
6-5	27	23	4	1.4%
Total (daily)	290	247	43	14.8%
Total (yearly)	105,850	90,155	15,695	14.8%
Cost of Average Tray			\$2.50	
Potential Cost Savings³			\$107.50	\$39,237.50

¹ Total over two meals for each unit (from unit observations)

² Percent of the total trays delivered

³ Total # trays not passed x Cost of average tray

Source: Tray passing data from unit observations in FY '02

cost savings. On average, there is approximately a 14.8% potential for waste reduction on the eight units. If the percentage of trays that are not passed can be reduced from 14.8% to 0%, YNHH can potentially save \$39,237.50 in meal service on an annual basis. However, since it would be unlikely that non-passing of trays could be eliminated completely, a more conservative goal would be to reduce the percentage of non-passed trays to 3%, thereby having a potential cost savings of \$7,938.75. See below for the calculation.

Total trays delivered annually	3% of total trays delivered that are not passed	Cost of average tray	Potential cost savings
105,850	3175.5	\$2.50	\$7,938.75

4.4. Assessing the Relationship Between Organizational Characteristics and Satisfaction Scores

ASSESSMENT AMONG LOW, AVERAGE, AND HIGH SATISFACTION GROUPS

Table 14 summarizes the average group values for the organizational characteristics among the LOW, AVERAGE, and HIGH satisfaction groups. The following is a descriptive analysis of the organizational characteristics according to the categories in which they belong. By inspecting for trends in the average values among the three satisfaction groups, the characteristics that seem to be good indicators for patient satisfaction were identified. The last column in Table 14 specifies the characteristics that were identified to be good indicators. Those noted with “Y, trend” in the table indicate a clear increasing or decreasing relationship between the particular characteristic and satisfaction scores.

Overall Volume and Bed Statistics

The comparison showed that units with a higher patient census were less satisfied than units with a lower patient census. The trend was such that patient satisfaction increased as the patient volume decreased. Therefore, patients on units 6-3/Neuro-Rehab and 6-5/General Surgery were generally happier than patients on other units (i.e., average daily census was 19.71 patients in the HIGH satisfaction group compared to 24.82 patients in the LOW satisfaction group). Bed size was correlated with volume such that units with more beds had higher volumes. It is likely that staff on units with smaller volumes are more attentive to patients since they have fewer to care for, thereby resulting in higher patient satisfaction levels.

Percent filled and percent turnover did not appear to be good indicators for patient satisfaction since no trends were found for these two characteristics. Average length of stay (ALOS), however, may be an indicator even though no trend was found. The ALOS of 4.90 days in the AVERAGE group may be misleading since unit 10M/Obstetrics is included in that group. The maternity unit tends to have healthier patients and new moms tend to stay in the hospital for no

Table 14. Assessing the Relationship Between Organizational Characteristics¹ and LOW, AVERAGE, & HIGH Satisfaction Scores
YNHH Internal Organizational Characteristics - FY '02

Satisfaction Group By Overall Deviation ²		Units	LOW (-29.2 and -22.9) less satisfied 6-4, 9-7	AVG (-18.0 to -10.5) 4-7, 10M, 8ONC, 7AD	HIGH (-2.5 and 0.0) more satisfied 6-3, 6-5	Indicator for patient satisfaction?
OVERALL VOLUME & BED STATISTICS						
Volume			24.82	20.54	19.71	Y, trend
# Beds			29.00	26.25	22.00	Y, trend
% Filled			85.9%	81.6%	89.2%	N
% Turnover			43%	43%	42%	N
Average Length of Stay (ALOS)			5.83	4.90	6.16	maybe
DIET STATISTICS						
Diet Type (%)						
Regular			22.2%	47.7%	28.8%	N
Modified			40.7%	36.0%	38.6%	N
NPO/Liquid			37.2%	16.3%	32.7%	N
Diet Changes (#/day)			17.5	6.8	8.5	Y
Late Trays (#/week)						
Breakfast			15.5	6.5	8.0	Y
Lunch			15.5	3.0	4.5	Y
Dinner			12.5	11.8	12.5	N
Total/week			43.5	21.3	25.0	Y
TRAY PASSING PROCESS STATISTICS						
% Tray Passed			83.9%	85.4%	84.9%	N
% Pts in Room Rec. Meals			91.9%	95.8%	97.0%	Y, trend
Timeliness (mins.)						
Wait Time (truck del to start)			4.8	9.9	4.5	N
Tray Passing (start to fin)			13.0	15.4	13.3	N
Total Time			17.8	25.3	17.8	N
OVERALL HOSPITAL SATISFACTION ³						
			77.6	83.6	82.2	Y

¹ Values are averages

² Deviation from Connecticut scores over four questions on Press, Ganey survey

³ Average group mean score over four quarters in FY '01

Key: Y, trend: relationship with clear trend

Y: relationship, no clear trend

maybe: possible relationship

longer than 3.18 days (the lowest ALOS among the other units).¹⁴ By comparing the ALOS between HIGH and LOW satisfaction groups, it seemed that patients who stayed in the hospital longer (6.16 days) were generally more satisfied, but this was dependent on other factors also. It could be that the longer people stay in the hospital, the more familiar they are with the system, and the more they know what to expect, even though they may be very sick. Percent filled seemed to be related to ALOS, such that the higher the ALOS, the higher the percent filled.

Diet

While diet type did not appear to be related to patient satisfaction, the number of diet changes and the number of late trays seemed to be good indicators for patient satisfaction. In general, the units with less satisfaction had almost twice as many number of diet changes per day than the units with higher satisfaction (17.5 changes in the LOW satisfaction group compared to 8.5 changes in the HIGH satisfaction group). It may be that when meal orders are changed, the patients are not notified, so they may be expecting one type of meal tray, but instead, receive another.

In terms of late trays, a higher number of late trays during the breakfast and lunch meals was directly correlated with higher dissatisfaction. The number of late trays during dinner was consistently high across all three variance groups, suggesting that the problem with late trays is also meal specific. Late trays may be a particular problem during dinner since most patients are back in their rooms at that time, so there may be more requests for trays that were not received earlier during the day. The average number of late trays per week in the LOW satisfaction group was almost twice that of the AVERAGE and HIGH satisfaction groups. Patients seemed to be less satisfied when they have to wait for their trays to be delivered after the regular meal service time. The number of late trays is indirectly related to other characteristics such as the number of diet changes, the percent of trays that are not passed, as well as the percent of patients

¹⁴ See **Table 6: Overall Volume and Bed Statistics By Satisfaction Group**

in their rooms to receive their trays during meal service. All three of these situations would affect the number of late trays ordered on a unit.

Tray Passing Process

Patient satisfaction did not seem to be related to the percent of trays passed, since the three groups had approximately the same percentage of trays passed, with an average of 84.9% among all the units.¹⁵ Whether or not patients were in the rooms to receive their trays, however, was a good indicator for patient satisfaction. In general, satisfaction levels seemed to be higher when patients were in their rooms for meal time, and the increasing trend was such that the higher the patient presence, the better the satisfaction. This may be because the patients who are in their rooms get their trays when they expect it rather than receiving late trays, and are able to consume their meals right away, which indirectly affects their ratings of the temperature of the food as well as the quality (i.e., hotter foods taste better).

No trend was observed for timeliness in tray passing routine. The LOW and HIGH satisfaction groups had similar times. The AVERAGE satisfaction group had the longest times (average total time was 25.3 minutes on the AVERAGE satisfaction units compared to 17.8 minutes on both LOW and HIGH satisfaction units). The data for the AVERAGE satisfaction group was probably skewed due to the unusually high average wait time and total time on unit 7AD/Adolescents.¹⁶ Except for the irregularity due to 7AD, most of the units demonstrated that tray passing occurred within a reasonable timeframe. More specifically, most of the trays were passed within the first five minutes of food truck arrival,¹⁷ which is one of the meal service expectations set for the patient care units.¹⁸

When the average overall hospital satisfaction was compared among the three groups, the LOW

¹⁵ See **Table 8: Tray Passing Process Statistics By Satisfaction Group**

¹⁶ Ibid.

¹⁷ See **Table 9: Timeliness of The Tray Passing Process On The Eight Units**

¹⁸ See **Appendix 5: Patient Care Unit Food and Nutrition Services Overview and Performance Expectations**

satisfaction group also had lower overall hospital satisfaction (see **Table 15**). Although there was no clear trend in overall hospital satisfaction, it seemed that in general, overall hospital satisfaction may be correlated with meal service satisfaction scores. That is, when patients were

**Table 15. Overall Hospital Satisfaction Scores Among the Eight-Unit Sample
Press, Ganey Results - YNHH, FY '01**

GROUP*	Overall Hospital Satisfaction Mean Scores							
	Overall Deviation ¹	Unit	Service Line	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Average
LOW								
	-29.2	6-4	General Surgery	77.9	74.4	74.9	77.0	76.1
	-22.9	9-7	Medicine	81.5	78.9	78.3	77.8	79.1
<i>Average</i>								77.6
AVERAGE								
	-18.0	4-7	Cardiovascular	86.2	84.1	84.3	84.3	84.7
	-16.7	10M	Obstetrics	83.8	86.5	82.3	80.3	83.2
	-13.7	8ONC	Oncology	78.4	81.7	83.4	87.7	82.8
	-10.5	7AD	PEDS-Adolescents	84.0	82.2	84.9	84.1	83.8
<i>Average</i>								83.6
HIGH								
	-2.5	6-3	Neuro-Rehab	86.5	83.3	81.3	79.8	82.7
	0	6-5	General Surgery	83.4	81.5	78.7	82.8	81.6
<i>Average</i>								82.2
<i>Average (8 units)</i>								81.8

* LOW to HIGH Satisfaction Group: greatest to least overall deviation from Connecticut scores

¹ Sum of the deviations from the Connecticut averages over four questions on Press, Ganey survey

overall more satisfied, their satisfaction with meal service was also higher. This implies that patients' overall hospital experiences has an impact on their ratings of food and service. The next section compares the organizational characteristics between the LOWEST and HIGHEST satisfaction units to further identify the differences between a low-performing unit and a high-performing unit in terms of satisfaction.

ASSESSMENT BETWEEN LOWEST AND HIGHEST SATISFACTION UNITS

Table 16 shows the average values for the organizational characteristics of the LOWEST and HIGHEST satisfaction units. Unit 6-4 had the highest overall deviation (LOWEST satisfaction unit) from Connecticut scores, and 6-5 had the least (HIGHEST satisfaction unit).

Table 16. Assessing the Relationship Between Organizational Characteristics¹ and HIGHEST and LOWEST Satisfaction Scores, YNHH Internal Organizational Characteristics - FY '02

General Surgery Service Line			
Satisfaction By Overall Deviation ²		Units	
	LOWEST (-29.2) least satisfied 6-4	HIGHEST (0.0) most satisfied 6-5	Indicator for patient satisfaction?
OVERALL VOLUME & BED STATISTICS			
Volume	21.07	16.86	Y
# Beds	24	20	Y
% Filled	87.8%	84.3%	maybe
% Turnover	51%	46.0%	maybe
Average Length of Stay (ALOS)	5.80	5.80	N
DIET STATISTICS			
Diet Type (%)			
Regular	30.0%	17.6%	maybe
Modified	10.0%	47.1%	maybe
NPO/Liquid	60.0%	35.3%	maybe
Diet Changes (#/day)	20	11	Y
Late Trays (#/week)			
Breakfast	13	8	Y
Lunch	5	4	N
Dinner	10	8	N
Total/week	28	20	Y
TRAY PASSING PROCESS STATISTICS			
% Tray Passed	71.4%	85.2%	maybe
% Pts in Room Rec. Meals	95.0%	100%	Y
Timeliness (mins.)			
Wait Time (truck del to start)	4	4	N
Tray Passing (start to fin)	15	13	N
Total Time	19	17	N
OVERALL HOSPITAL SATISFACTION³	76.1	81.6	Y

¹ Values are averages

² Deviation from Connecticut averages over four questions on Press, Ganey survey

³ Average mean score over four quarters in FY '01

Key

Y: reinforces relationship found in Table 14

maybe: possible relationship

N: no relationship

Since this assessment was made between two units, it was not possible to note trends. Therefore, the assessment was used to either confirm or refute the possible relationships between organizational characteristics and satisfaction scores that were found in the assessment among LOW, AVERAGE, and HIGH satisfaction groups (Table 14). Again, possible relationships were noted by inspection, and those noted with “Y” reinforced the relationships found in Table 14 among the LOW, AVERAGE, and HIGH satisfaction groups.

Overall Volume and Bed Statistics

The assessment between 6-4 and 6-5 reinforced two trends and relationships found in the assessment among LOW, AVERAGE, and HIGH satisfaction groups. That is, lower volume and fewer number of beds was correlated with highest satisfaction. Patients seemed to be happier on smaller units. Perhaps patients received more attention on smaller units, so this would imply that service has an impact on meal ratings.

Again, no clear relationship could be identified with percent filled and percent turnover, although it seemed that the lower the percent filled and percent turnover, the higher the satisfaction. Percent filled may be related to service also, since a full unit may imply busier staff who may not be able to give patients the attention they need. Lower turnover means that there are more stable patients on the unit. Stable patients may be more familiar with the routine on the unit, and they know what to expect, so their ratings may be higher than units that have higher turnover and more patients who are getting moved around more frequently. There was no difference in ALOS between unit 6-4 and 6-5, so the length of time patients stay in the hospital does not appear to be a good indicator for patient satisfaction; this finding refuted the possible relationship suggested in the assessment of LOW, AVERAGE, and HIGH satisfaction groups.

Diet Statistics

While no relationship was found between diet type and satisfaction in the assessment among

LOW, AVERAGE, and HIGH satisfaction groups, it seemed that diet type could be related to satisfaction when it was compared between 6-4 and 6-5. Although no clear trend could be noted, higher satisfaction was found on units with fewer patients on regular diets, more on modified diets, and fewer on NPO/liquid diets. It is unusual that high satisfaction would be correlated with more patients on modified diets because these diets are adjusted in order to comply with patients' medical condition. Restricted diets were expected to cause more dissatisfaction since these diets may not be what patients normally like to eat. On the other hand, it was expected that lower satisfaction was correlated with more NPO diets since patients on these diets do not get to select their own menus, which may be a cause of dissatisfaction.

More diet changes and higher numbers of late trays were correlated with the least satisfaction. The relationships among these two characteristics were reinforced in this assessment between units 6-5 and 6-5, so diet changes and number of late trays seem to be good indicators for patient satisfaction. Perhaps more diet changes means more confusion, and hence, more dissatisfaction. Satisfaction due to late trays may be related to diet changes since changes to patients' diets requires a change in their meal trays. If a tray has been delivered onto the unit without the corresponding changes to trays, then patients would have to wait while their trays are corrected. More late trays seemed to occur during breakfast. In comparing units 6-4 and 6-5, late trays during lunch no longer seemed to be a cause of dissatisfaction even though there was a relationship found in assessing the three satisfaction groups (Table 14). This was because unit 9-7, which had the most number of late trays during lunch (Appendix 3), was removed in this assessment.

Tray Passing Process Statistics

Higher satisfaction could be related to a higher percentage of trays being passed, but since no trend was noted from the assessment among the three satisfaction groups, percent of trays passed does not appear to be a good indicator for patient satisfaction. However, patients were most

satisfied if they were in their rooms to receive their trays, which confirmed the relationship found in Table 14; that is, the higher the percentage of patients who are in their rooms during meal service, the higher the satisfaction. Since 6-5 had a lower percent turnover than 6-4, it was expected that the unit would have a higher percentage of patients receiving trays during meal service. Comparing the LOWEST and HIGHEST satisfied units also confirmed that timeliness of tray passing was not related to patient satisfaction.

When the average overall hospital satisfaction was compared between 6-4 and 6-5, it confirmed that when patients were more satisfied overall, they also rated their satisfaction with meal service higher. This relationship underscores the importance of providing patients with good service overall because their overall experience seems to have an impact on other satisfaction ratings.

The differences in the characteristics between units 6-4 (LOWEST satisfaction) and 6-5 (HIGHEST satisfaction) might be explained by the type of patients who are on these units. While both are in under the General Surgery service line, 6-4 surgeries are mainly for trauma patients, whereas unit 6-5 handles the plastics/ENT surgeries. As such, patients on 6-5 tend to be more stable with fewer diet changes (11 changes compared to 20 changes on 6-4). It may also be that these patients have fewer comorbidities and are generally more healthy overall, so they might tend to be more happy and satisfied in general. In contrast, unit 6-4 tends to have more complicated or emergent surgeries that could be of any type and the patients are more complex.¹⁹

Additionally, as noted by Susan Sandals, Clinical Nutrition Specialist at YNHH, more protocols are followed on 6-5 in terms of clinical pathways, whereas on 6-4 the outcomes are not as well documented via the protocols. As a dietician, Sandals interacts closely with the patient care units and is familiar with the staff and the patient population on the units. She stated that the RN staff on 6-5 tends to be more organized and they are more familiar with the routine for patients who

¹⁹ Source: Lisa Mastroianni, Clinical Nutrition Coordinator at YNHH

come through the unit, while the RN staff on 6-4 tends to be more harassed and stressed. The overall hospital satisfaction scores shown in Table 16 seemed to reflect these issues, as patients on 6-5 were more satisfied than those on 6-4 (mean score of 81.6 vs. 76.1, respectively).

4.5. Summary of Unit Observations

Below is a summary of the main observations related to meal service that were noted on the units.

It is organized according to five main categories:

- 1) Promptness of tray passing
- 2) Number of tray passers
- 3) Checking orders
- 4) Explanation of diets
- 5) Courtesy and level of interaction

Promptness

Most of the meal trucks were attended to within the first 5 minutes of their arrival onto the units. The unusual exceptions were noted on unit 7AD/Adolescents and during one meal (breakfast) on 10M/Obstetrics. On 7AD, a dinner truck waited for 13 minutes and a lunch truck waited for over 25 minutes before tray passing started. The staff on this unit appeared to be very preoccupied and most just walked right by the trucks. On 10M, a patient had called the Business Associate inquiring about breakfast. When the truck arrived 8 minutes later, it took another 13 minutes before tray passing was initiated. The 13-minute waiting may have partly been the result of not having any PCAs on that particular morning, as was explained by the BA and the RNs who ended up passing the trays.

Number of Tray Passers

The number of persons passing trays on each unit varied among meals as well as among units. For instance, on units 6-4/General Surgery, 9-7/Medicine, and 4-7/Cardiovascular, there was one PCA during one meal and 2 PCAs during another meal. There was only one complaint from a PCA on unit 6-4 who said, "I'm only one person; I can't do it all." 8ONC had three servers, the

most on any unit. For most meals, there were usually 2 PCAs passing out trays.

Checking Orders

Rarely did persons passing trays seem to check meal orders as they were passing them out. In most instances, it appeared that the servers were familiar with the patients on the units, and therefore did not need to check what the patient had ordered. Only when there was a discrepancy did they servers check the type of diet the patients were on. This was usually done by checking the blue binders that were kept by each room or by asking the patient's nurse. There seemed to be more confusion on some floors than on others, which led to more orders getting checked. On 7AD for instance, the servers were constantly checking orders because the names on the menus did not match the patients' names on room labels. The problem was that patients' last names were written on the menus, but the rooms were labeled by first names. This inconvenience may have contributed partly to the longer tray passing times on 7AD. Confusion on 4-7, however, was due to missing trays and servers not knowing why particular patients did not get trays.

Explanation of Diets

Diets were never explained during tray passing. This was expected since explanation of diets usually occurs through the dietitians. One attempt was observed when a PCA on 4-7 told a diabetic patient that he was not supposed to have candy.

Courtesy and Level of Interaction

The level of interaction between patients and servers was very minimal. In most cases, trays would just get dropped off in the rooms with no interaction at all, except for a quick greeting or an announcement of meal arrival. The friendliness of servers on each unit varied throughout tray passing. On 6-5, the highest-performing unit among the others, the PCAs were friendly and they chatted with patients as they passed them their trays. The staff on 7AD/Adolescents also seemed friendlier than the staff on other units. They were more playful with the younger patients.

Setting up patients or helping patients with their meals also seemed to occur minimally or spontaneously at the discretion of the person passing trays. During the lunch meals, servers seemed rushed. On 9-7, the PCA left the unit right after she was done passing out trays, presumably to go to lunch, and was therefore, not available to help patients with their meals. The service on 10M/Obstetrics seemed especially short. The servers did not give patients any personal attention or any greetings when they dropped off the trays.

OVERALL ASSESSMENT OF MEAL SERVICE PROCESS ON THE UNITS

The unit observations suggest that the quality of service on the patient care units can have an impact on meal ratings. Since meals are prepared and distributed from one central location, it is unlikely that there would be differences in the quality of meals. However, once the meals are delivered onto the units, the way they are passed to patients can vary depending on the staff on the units. The unit observations showed that service did indeed vary on the units. More importantly, service seemed short at best, and rarely did servers spend time helping patients with their meals beyond just setting them up. Thus, the quality of service is an important factor affecting patient satisfaction scores in meal service.

5. Discussion

5.1. Discussion of Findings

VARIABILITY IN SATISFACTION BY UNIT

The descriptive analysis of satisfaction scores showed substantial variation in meals satisfaction scores among the ADULT and PEDIATRIC inpatient units. Furthermore, except for two units, all the units were below the Connecticut benchmark.

Comparisons among the eight-unit sample in terms of organizational characteristics and unit observations identified six major sources of inter-unit variability in patient satisfaction scores. These were: 1) diet changes, 2) late trays, 3) percent of patients in their rooms to receive trays of the total number of trays passed during meal time, 4) patient volume, 5) bed size, and 6) overall hospital satisfaction. The first three factors are directly related to food and nutrition, while the last three factors relate to broader organizational-level issues of the hospital. The following discussion expands on how these factors were thought to be related to patient satisfaction in meal service.

DETERMINANTS OF POORER SATISFACTION: FOOD AND NUTRITION FACTORS

Diet Changes

The results showed that the more diet changes there were, the more dissatisfied the patients were. Dissatisfaction may be due to patients being uninformed of their diet changes, causing them to be confused about not receiving a tray, receiving the wrong tray, or one that they did not select. Diet changes may be particularly problematic under the new Advanced Food System (AFS) because meal orders are placed a day in advance. Patients usually receive menus on their trays during breakfast, and are required to select their breakfast, lunch, and dinner meal choices for the following day. Dietetic technicians pick up these menus later in the afternoon in order to begin

the process of preparing for the next day's meal orders. The problem with this is that patients' diets may change throughout the day, and by the time they receive their trays the next day, a new diet order may have been placed for them. There are two possible sources of error due to changes in diets: 1) communication issues, and 2) systems issues. First, if the patient care units do not communicate the changes to the kitchen, then patients either end up receiving the wrong trays or they have to wait for another tray. If there are no extra trays available that are appropriate for their diet, then a late tray would need to be ordered. A system error would result if the meal orders were communicated but the kitchen was not able to process the new orders correctly and/or in a timely manner (i.e., critical change time) before delivering the trucks onto the units. This type of systems error seems inherent with the new food system.

Late Trays

A higher number of late trays was associated with higher dissatisfaction. In fact, the total number of late trays per week for the LOW satisfaction units was almost twice that of the AVERAGE and HIGH satisfaction groups. There are several factors that may contribute to a higher number of late trays delivered to a unit, including volume, turnover on a unit, and type of patients on a unit. For instance, higher volume and turnover mean more activity and a higher potential for wrong trays being delivered onto a unit due to patients being transferred to another unit or already discharged. The type of patients on a unit also has implications for the number of late trays that may need to be ordered on a unit. That is, more complex patients may have more diet changes requiring new orders or they may get more tests and procedures, which affects whether they are in their rooms to receive trays during meal time.

It was thought that perhaps the Advanced Food System (AFS) may have contributed to an increase in the number of late trays that need to be ordered. Since food is prepared from meal orders that are placed a day in advance, late trays are inevitable when there are unanticipated diet changes throughout the day. An assessment of the late trays trend from fiscal year 1996 to 2000

(before and after the implementation of the AFS in 1999) was performed to gain insight into the possibility that the AFS may have contributed to the number of late trays. However, the assessment showed that the number of late trays compared to total late trays was actually higher before the AFS was implemented.²⁰ While the trend is contrary to what was expected, it may be important to conduct similar time trend assessments with other organizational characteristics to investigate whether satisfaction levels are due to factors related to the new food system.

Percent of Patients in Room Receiving Trays

The results showed that higher satisfaction was associated with a higher percentage of patients in their rooms to receive their trays. This may be because patients who are in their rooms get their trays when they expect it and they are able to consume their meals right away. Whether or not patients were in their rooms to consume their meals during meal service may have an impact on their satisfaction ratings of temperature and quality of the food, although these relationships were more difficult to observe and assess. For instance, if patients were not in their rooms to receive their trays during meal time, the food may have gotten cold by the time they returned to their rooms, and thus not taste as good, especially if meals were sitting out for long periods of time. The temperature of the food may have contributed to ratings of food quality, which was the lowest scoring item on Press, Ganey across all service lines.²¹

DETERMINANTS OF POORER SATISFACTION: ORGANIZATIONAL-LEVEL FACTORS

Patient Volume

The results showed that there was an inverse relationship between patient volume and satisfaction scores, such that patient satisfaction increased as the patient census decreased. Perhaps the staffs on units with smaller volumes are more attentive to patients since they have fewer to care for. Higher volumes may result in busier units and therefore, nurses may not be able to provide the

²⁰ See **Appendix 7: Late Trays Trend Between 1996 - 2000**

²¹ See **Table 3: Meals Section Average Satisfaction Scores By Service Line**

needed attention. The importance of having adequate staffing levels is underscored here.

Bed Size

The number of beds on the unit was also inversely related to patient satisfaction, such that units with more beds had lower satisfaction scores. Bed size was related to volume such that units with more beds had higher volumes. Again, patients seemed happier on smaller units, perhaps because they were able to receive more attention than patients on larger units. This would imply that service has an impact on meal ratings.

Overall Hospital Satisfaction

Patient satisfaction with meal service seemed to be correlated with overall hospital satisfaction, especially when it was assessed between the highest and the lowest satisfaction units. In general, it appeared that patients who were overall satisfied with their hospitalization experience were also more happy with meal service. Overall hospital satisfaction includes patients' perceptions on such factors as courtesy of hospital staff among other characteristics, and this aspect was readily observable and compared among the units through the unit observations. Direct observations showed that courtesy and friendliness of the staff varied among the units and among servers, as well as the level of service and interaction with patients during tray passing. In general, there was minimal interaction between patients and servers, and rarely did servers seem to spend time helping patients with their meals.

These observations seem to imply that the staff and service on the patient care units have as much, if not more, to do with meal service ratings as the Department of Food and Nutrition itself. The data suggest that the overall score for meals would improve if patients were treated better. The data also make it clear that patients' attitudes toward meal service depend on how their treatment and illness are being managed altogether, and not just on what they are eating. This seems to be a logical conclusion, says Donna Diers, a registered nurse who is the Project Director

for the Nursing/RIMS Office at YNHH, suggesting that perhaps patients act out their fear and suffering on meal service ratings. She believes that patients take out their frustrations on the food since it is safer than criticizing the nurses and doctors, whom they depend on so much for their care.

SUMMARY OF DETERMINANTS OF SATISFACTION RATINGS

The results of this study suggest that many factors play a role in patient ratings of meal service, and while this conclusion confirms what the Department of Food and Nutrition expected, this study teases out the major factors that might be contributing to patients' satisfaction with meal service. Furthermore, while Press, Ganey is a good assessment tool for benchmarking YNHH's performance with other hospitals, the results of this study raises questions about its usefulness for the Department of Food and Nutrition. The meals section survey items (i.e., explanation of special diets, temperature of the food, quality of the food, and courtesy of person passing trays) may not be capturing what is really contributing to patient satisfaction with meal service. Also, the six characteristics shown to be related to satisfaction in this study suggest that the Press, Ganey survey could be measuring factors that are not necessarily about food service per se, but rather, factors that are beyond the Department's control, such as the way patients are treated by the clinical and nursing staff. This suggests that improvements in clinical and nursing services would correspond to increases in meal ratings. Therefore, it is difficult to hold Food and Nutritional Services accountable for factors they have no control over. Also, the Department may be spending valuable time, resources, and energy on improving patient satisfaction that is related to issues it cannot solve or fix independently.

5.2. Limitations

There were three main limitations of this study: 1) small sample size, 2) reliability of the new Press, Ganey data with low response rates, and 3) ability to generalize from results obtained at

YNHH. Each limitation is further elaborated in the following discussion.

Small Sample

While several relationships were found between organizational characteristics and satisfaction scores, the statistical significance of these relationships were not assessed due to the small sample size (n=8 units). Nevertheless, the descriptive analyses provided insights to the organizational factors that may be linked to satisfaction scores, and this information could be used to develop strategies for improving satisfaction that could be applicable to other units and areas of the hospital. Furthermore, the results from this relatively small study sample of eight units may not necessarily be representative of the whole hospital and may just represent unit-specific results. However, the data were verified with the Director of Food and Nutritional Services to make sure they were representative of the hospital's historical trends. Also, in comparing units with the highest satisfaction with units with the lowest satisfaction, the study provided some insight into the differences between high-performing units versus low-performing units in terms of patient satisfaction with meal service.

Reliability of Press, Ganey Results

The next limitation relates to the reliability of the relatively “new” Press, Ganey data for YNHH. Since the data reviewed here was the first set of satisfaction data after changing assessment tools, it was not possible to compare trends with previous years' satisfaction ratings using the same tool. Also, since the Press, Ganey satisfaction scores in meal service were lower than previous survey results using the prior assessment tool, it is difficult to assess whether the scores reflect a decrease in service level or whether Press, Ganey is just a different and more sensitive tool that measures even the slightest management or operational changes. Nevertheless, the percentile rankings provided by Press, Ganey allows YNHH to compare its performance among its competitors, since improving patient satisfaction remains an important endeavor.

The question about the reliability of the new Press, Ganey tool for YNHH is further exacerbated by low response rates, which may have affected the quality of the data. The response rate for last fiscal year's data was between 18-21%,²² which is even lower than the optimal response rate of 25% set by Press, Ganey and far lower than most research studies. Press, Ganey reports scores for units that have at least seven responses; in some cases, these data may lack precision and validity. The Excel analysis conducted for this project ignored low response rates and analyzed the mean scores as they were reported. This may have affected the interpretation of the data, such that the low scores in some units may be due to response rate rather than actual patient satisfaction with meal service. However, since consumers make decisions based on these data, it is not really an issue if the data are not credible or valid because low (invalid) scores still deter customers from using the services provided by an institution.

Ability to Generalize Beyond the Case Study

Since the study was only conducted at YNHH, the specific results may not necessarily be generalized to other hospitals. Nevertheless, the study's conclusions about the relationship between organizational characteristics and satisfaction scores in meals services provides important implications for improving patient satisfaction, which might be applicable to other areas of YNHH as well as to other hospitals.

5.3. Recommendations

RECOMMENDATIONS FOR THE DEPARTMENT OF FOOD AND NUTRITION:

The data clearly show that service is an integral part of the meals process and an important determinant of meals ratings. As such, the Department of Food and Nutritional Services needs to understand how to partner with nursing services and other clinical services to improve patient satisfaction. Rather than focusing internally on what Food and Nutrition can do independently, the Department needs to integrate with the staff and services on the patient care units as part of a

²² Source: Lynn Charbonneau, Manager of Patient Relations, YNHH

coordinated effort. Better integration with patient services on the units is key since Food and Nutrition has no control over the tray passing process on the units. Furthermore, the Department's improvement plans should identify and create opportunities for the patient care units to be a part of improvement initiatives. The following recommendations outline ways in which the Department of Food and Nutrition can improve integration with patient care services to improve patient satisfaction with meal service. The recommendations specifically address three of the six determinants of patient satisfaction that were found in this study; more specifically, late trays, diet changes, and overall satisfaction

- **IMPROVE THE EFFICIENCY OF PROCESSING LATE TRAYS AND DIET CHANGES BY CENTRALIZING COMMUNICATION PROCESSES BETWEEN PATIENT CARE UNITS AND THE DEPARTMENT.**

Explanation: There needs to be a more efficient way to process orders for late trays and diet changes in a timely manner, especially since the kitchen closes after 7 pm. Communication is key. Currently, there are meal service expectations that outline the procedure for ordering late/additional trays. The Business Associate is responsible for beeping dietetic technicians (days), calling the Diet Communication Center (evenings/nights), or beeping the Unit Service Manager (after hours meal service) for patient meal requests. While this three-tier communications channel provides several contact points, the decentralization makes it more confusing and inefficient for tracking and follow-up purposes. The process would be more streamlined if communications were centralized to one location, perhaps only at the Diet Communications Center. Rather than beeping one of several dietetic technicians who are only available between 5 am to 7 pm, there should be only one contact number so that orders can be received at one location.

The Department is also currently developing a plan to possibly convert a satellite kitchen into a regular kitchen to handle all additional tray requests (made to order rather than advanced food system). This may be a worthwhile investment that would facilitate the speed of meeting requests

for additional trays. However, it should be piloted first and evaluated for efficiency before implementing throughout the hospital. Nevertheless, centralizing communications between the units and the Department would increase efficiency of tray processing and may help to reduce the number of late trays, which has implications for cost-savings from waste reduction.

- INCREASE THE ROLE OF PCAs TO PROVIDE DIET EXPLANATIONS DURING TRAY PASSING.

Explanation: While PCAs are not licensed to provide diet instruction, there may be some benefit in training them to provide simple and clear diet explanations during tray passing, especially for patients who are on special diets. Explanation of special/restricted diets is one of the Press, Ganey survey items that had the largest variation between the highest and lowest scores among ADULT inpatient service lines,²³ and therefore, is an important issue to address. Explanations of diets were not observed during meal time because PCAs are not expected to do so. Currently, Clinical Dietitians are responsible for providing nutrition education to patients/family and staff as needed and dietetic technicians are responsible for verifying diet orders and contacting patients to inform them of food adjustments if their diet changes. Since dietetic technicians may not always have the time to call patients to explain the changes or may have difficulty contacting patients, some patients may end up receiving items that they did not select. This may be a source of dissatisfaction, especially if patients are not getting what they want and no one is explaining the reason for changing their orders.

An ideal time to explain diets would be during meal time as soon as patients receive their trays. This would help to lessen any confusion that may arise, especially for those patients on special diets. The PCAs would be the ideal communication channel since they are the ones passing out meal trays and they are aware of what type of diets the patients are on. They can be trained to provide simple and clear explanations about what patients can or cannot eat depending on the

²³ See **Table 3: Meals Section Average Satisfaction Scores By Service Line**

type of diets they are on. Scripting may be useful here.

- **EXPAND MEALS SERVICE EXPECTATIONS TO INCORPORATE HOSPITALITY STANDARDS AND DEVELOP STRATEGIES TO MONITOR PERFORMANCE**

Explanation: Since the data show that meal service ratings are not just about the food, but about the service also, hospitality during tray passing needs to be stressed as an important initiative for meal service. That is, quality may be more difficult to impact because it would require Food and Nutrition to provide upscaled menu items regularly (i.e., costly and less feasible). Incorporating courtesy during tray passing, however, may impact patients' experiences overall, and contribute to higher satisfaction overall. Servers need to realize that they make a difference in meal ratings and they need to be on board with Food and Nutrition to provide the best service possible. Food and Nutrition can use the insight that was gained from observing high-performing units to develop best practice guidelines for tray passing.

Furthermore, while YNHH has developed Patient Care Unit Performance Expectations for Food and Nutrition Services,²⁴ there needs to be a better system for monitoring the performance to make sure that unit staff are meeting the meal service expectations. The unit observations showed that there is room for improvement in terms of meeting these expectations. For instance, the BA did not always announce the arrival of the meal trucks. Also, tray passing was not always passed within five minutes of the arrival of the trucks and servers did not always assist patients with their meals. There were also some inconsistencies among the PCAs on different units as to the protocol for what to do with trays that are not passed to patients. For example, some PCAs said that trays are left on the meal trucks and sent back to the kitchen, while others said that the trays are kept in the unit's kitchen in case there were new admissions on the unit. These inconsistencies in tray passing among the units emphasize the need for improving communication processes.

²⁴ See **Appendix 4**

RECOMMENDATIONS FOR BROADER HOSPITAL INITIATIVES

Given the conclusion that patient satisfaction with meal service may be due to factors that are beyond the control of the Department of Food and Nutritional Services, management needs to realize that improving patient satisfaction in meal service takes a broader hospital effort. The department continues to focus substantial energy on improving patient satisfaction, but only to be met with incremental improvements. Nevertheless, the department is indeed making progress. However, the modest improvements suggest that perhaps Food and Nutrition is being held accountable for factors that may be beyond the scope of its capabilities. This study showed that some of these factors include patient volume, bed size, and overall hospital satisfaction that depends on the service provided by the staff on patient care units. Broader hospital initiatives should include:

- Providing better incentives for integration of Food and Nutrition with patient services.
- Evaluating Food and Nutrition's performance by incorporating the service performance on the units.
- Reemphasizing customer service philosophy in all areas of the hospital; everyone in the organization is responsible for providing patients with the best service.
- Developing a long-term comprehensive organizational transformation that encourages coordination across non-medical and medical disciplines.

5.4. Conclusions

The results of this study emphasize the importance of three key dimensions for improving patient satisfaction in patient care environments: 1) customer service, 2) service integration, and 3) communication. All three of these dimensions are intricately connected, and the absence of one may have serious negative implications for patient satisfaction ratings.

As healthcare becomes more and more consumer-directed, patients will demand more from their providers of care. In a competitive hospital market, superior customer service is what sets one hospital apart from another. Therefore, meeting customer expectations for both their medical and

non-medical needs is an important endeavor. Meeting customer expectations requires better service integration across organizational boundaries because patient attitudes are impacted by a multitude of factors that go beyond the control of individual functional areas. Departments have to recognize that they do not operate independently, that they are part of the larger organizational milieu, and that systems interactions affect how one department impacts another in terms of satisfaction ratings. Communication is key to service integration. Improved communication and teamwork between hospital departments will ensure that operations flow more smoothly, which ultimately affects patients' hospital experience.

While meal service has traditionally been ignored as a priority issue on management's agenda, the dynamic interaction between the need for customer service focus, better service integration, and improved communication has important implications for improving satisfaction. The interaction between these three key dimensions reinforces the idea that improving patient satisfaction requires a broader hospital effort.

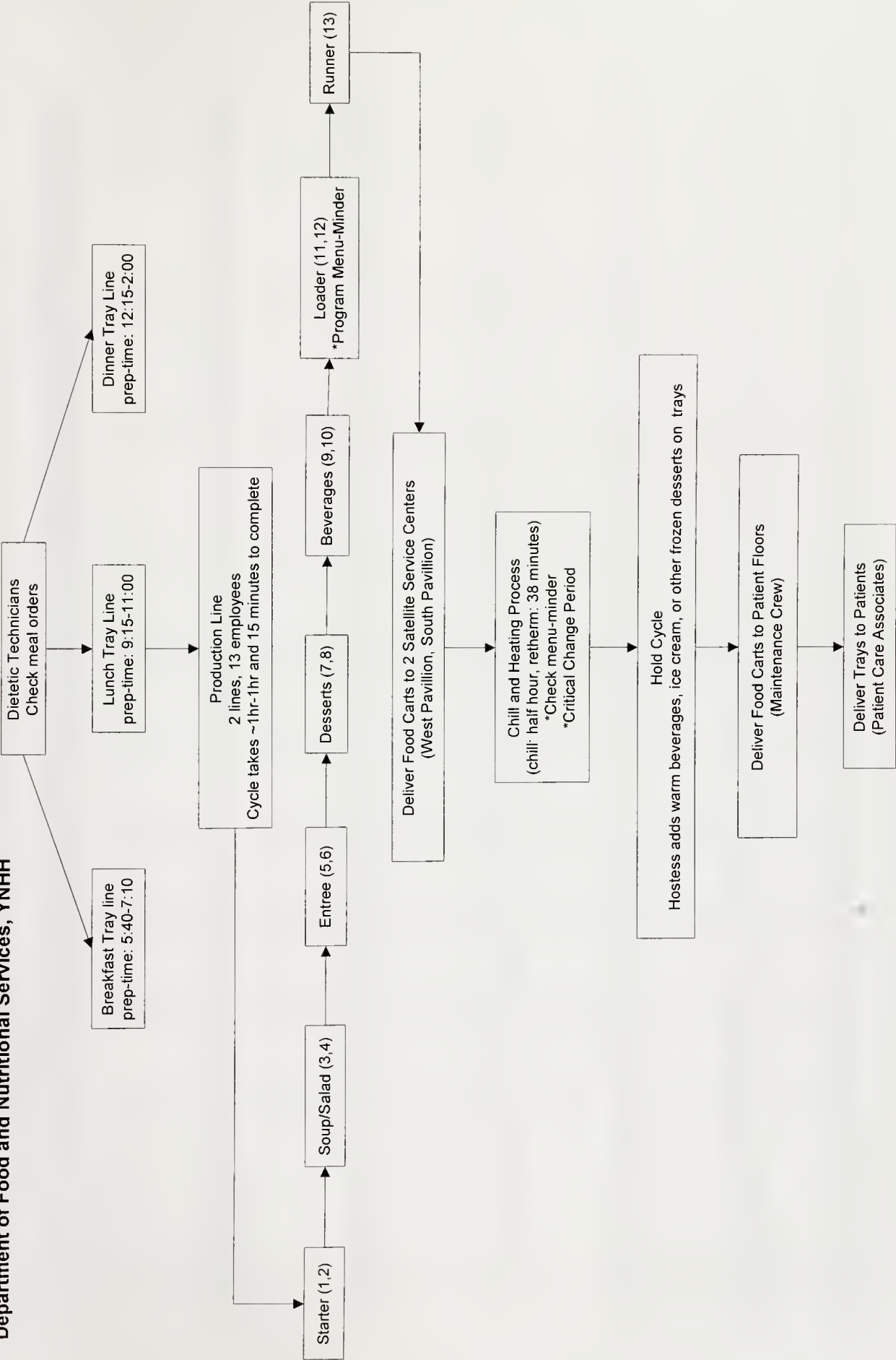
Even though health care is in the midst of a love affair with measurement,²⁵ organizations must remember that the focus is on improving patient experiences rather than improving satisfaction scores. That is, while numbers provide an important tool for benchmarking an organization's performance to its competitors, improvement efforts should be designed with the patient's interests as the primary driving force.

²⁵ Berwick, DM. A primer on leading the improvement of systems. *British Medical Journal*, 1996; 312: 619-622.

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Appendix 1: Tray Production Process Flow Diagram
Department of Food and Nutritional Services, YNH



Appendix 2a. Press Ganey Results - ADULT INPATIENT Meals Section Unit Analysis (Mean Scores)
 QUESTION 1: "IF YOU WERE PLACED ON A SPECIAL/RESTRICTED DIET, HOW WELL WAS IT EXPLAINED?"
 YNHH, FY '01: 10/1/2000-9/30/2001

Service Line	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Overall Change	Hospital Average	CT Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - CT)
Cardiovascular									
4-7	75.9	65.5	64.3	69.2	-6.7	68.7	71.5	73.6	-4.9
5-3	69.4	69.2	73.5	70.6	1.2	70.7	71.5	73.6	-2.9
10-7	70.0	60.5	69.3	68.8	-1.2	67.2	71.5	73.6	-6.5
5-2*	n/a	n/a	n/a	72.5	-	72.5	71.5	73.6	-1.1
Service Line	71.8	65.1	69.0	70.3	-6.7	69.0	71.5	73.6	-4.6
General Surgery									
6-4	70.8	65.6	66.7	65.3	-5.5	67.1	71.5	73.6	-6.5
6-5	85.7	74.2	69.2	73.5	-12.2	75.7	71.5	73.6	2.0
6-7	69.7	65.6	70.0	62.5	-7.2	67.0	71.5	73.6	-6.7
7-5	56.3	65.8	67.9	61.5	5.2	62.9	71.5	73.6	-10.8
Service Line	70.6	67.8	68.5	65.7	-19.7	68.1	71.5	73.6	-5.5
Medicine									
5-5	81.3	67.3	83.9	62.5	-18.8	73.8	71.5	73.6	0.1
5-7	53.1	69.1	72.5	72.7	19.6	66.9	71.5	73.6	-6.8
9-5	-	62.5	88.6	72.7	10.2	74.6	71.5	73.6	1.0
9-7	73.1	66.3	58.8	67.7	-5.4	66.5	71.5	73.6	-7.2
Service Line	69.2	66.3	76.0	68.9	5.6	70.1	71.5	73.6	-3.5
Neuro/Rehab									
6-3	86.1	75.0	70.7	70.7	-15.4	75.6	71.5	73.6	2.0
7-7	64.3	73.2	73.4	62.5	-1.8	68.4	71.5	73.6	-5.3
10-6	-	79.6	80.6	92.9	13.3	84.4	71.5	73.6	10.7
Service Line	75.2	75.9	74.9	75.4	-3.9	75.4	71.5	73.6	1.7
Obstetrics									
10M	75.0	86.7	72.2	76.9	1.9	77.7	71.5	73.6	4.1
10MS	-	-	67.5	69.4	1.9	68.5	71.5	73.6	-5.2
11M	76.3	73.0	79.5	80.4	4.1	77.3	71.5	73.6	3.7
Service Line	75.7	79.9	73.1	75.6	7.9	76.0	71.5	73.6	2.4
Oncology									
8ONC	56.3	63.6	78.3	81.3	25.0	69.9	71.5	73.6	-3.8
9-G	80.4	78.9	69.4	82.1	1.7	77.7	71.5	73.6	4.1
Service Line	68.4	71.3	73.9	81.7	26.7	73.8	71.5	73.6	0.2

(-) mean is not displayed

CT Average is average of CT peer group mean for this particular question over four quarters

*This unit replaced 10-7 after 7/12/01 during the fourth quarter

Appendix 2b. Press Ganey Results - ADULT INPATIENT Meals Section Unit Analysis (Mean Scores)
QUESTION 2: "TEMPERATURE OF THE FOOD (COLD FOODS COLD, HOT FOODS HOT)"
YNHH, FY '01: 10/1/2000-9/30/2001

Service Line	Unit	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Overall Change	Average	Hospital Average	CT Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - CT)
Cardiovascular											
	4-7	77.5	72.8	68.6	74.6	-2.9	73.4	73.5	75.9	-0.1	-2.6
	5-3	72.3	75.8	74.1	77.1	4.8	74.8	73.5	75.9	1.3	-1.1
	10-7	73.4	72.6	71.5	80.3	6.9	74.5	73.5	75.9	1.0	-1.5
	5-2*	n/a	n/a	n/a	73.4	-	73.4	73.5	75.9	-0.1	-2.5
Service Line											
		74.4	73.7	71.4	76.4	8.8	74.0	73.5	75.9	0.5	-2.0
General Surgery											
	6-4	63.2	69.0	74.0	71.2	8.0	69.4	73.5	75.9	-4.2	-6.6
	6-5	77.8	76.3	74.4	79.0	1.2	76.9	73.5	75.9	3.4	0.9
	6-7	71.7	73.5	73.2	74.5	2.8	73.2	73.5	75.9	-0.3	-2.7
	7-5	65.6	72.5	73.5	73.5	7.9	71.3	73.5	75.9	-2.2	-4.7
Service Line											
		69.6	72.8	73.8	74.6	19.9	72.7	73.5	75.9	-0.8	-3.2
Medicine											
	5-5	72.5	66.2	75.0	65.6	-6.9	69.8	73.5	75.9	-3.7	-6.1
	5-7	75.0	76.1	70.3	75.0	0.0	74.1	73.5	75.9	0.6	-1.8
	9-5	68.2	72.2	87.5	76.8	8.6	76.2	73.5	75.9	2.7	0.2
	9-7	77.8	70.4	68.8	72.8	-5.0	72.5	73.5	75.9	-1.1	-3.5
Service Line											
		73.4	71.2	75.4	72.6	-3.3	73.1	73.5	75.9	-0.4	-2.8
Neuro/Rehab											
	6-3	81.4	75.7	74.5	68.9	-12.5	75.1	73.5	75.9	1.6	-0.8
	7-7	67.6	71.4	70.8	70.7	3.1	70.1	73.5	75.9	-3.4	-5.8
	10-6	-	78.6	77.5	88.5	9.9	81.5	73.5	75.9	8.0	5.6
Service Line											
		74.5	75.2	74.3	76.0	0.5	75.0	73.5	75.9	1.5	-0.9
Obstetrics											
	10M	72.0	77.7	72.9	71.2	-0.8	73.5	73.5	75.9	0.0	-2.5
	10MS	70.8	76.4	68.0	85.4	14.6	75.2	73.5	75.9	1.7	-0.8
	11M	74.8	74.3	72.9	76.8	2.0	74.7	73.5	75.9	1.2	-1.2
Service Line											
		72.5	76.1	71.3	77.8	15.8	74.4	73.5	75.9	0.9	-1.5
Oncology											
	8ONC	65.6	72.4	71.4	78.1	12.5	71.9	73.5	75.9	-1.6	-4.1
	9-G	73.9	75.6	72.3	71.2	-2.7	73.3	73.5	75.9	-0.3	-2.7
Service Line											
		69.8	74.0	71.9	74.7	9.8	72.6	73.5	75.9	-0.9	-3.4

(-) mean is not displayed

CT Average is average of CT peer group mean for this particular question over four quarters

*This unit replaced 10-7 after 7/12/01 during the fourth quarter

Appendix 2c. Press Ganey Results - ADULT INPATIENT Meals Section Unit Analysis (Mean Scores)

QUESTION 3: "QUALITY OF THE FOOD"

YNHH, FY '01: 10/1/2000-9/30/2001

Service Line	Unit	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Overall Change	Average	Hospital Average	CT Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - CT)
Cardiovascular											
	4-7	72.0	63.9	57.1	67.2	-4.8	65.1	66.1	71.4	-1.1	-6.4
	5-3	68.6	72.0	68.1	72.0	3.4	70.2	66.1	71.4	4.1	-1.2
	10-7	61.7	71.4	65.4	71.1	9.4	67.4	66.1	71.4	1.3	-4.0
	5-2*	n/a	n/a	n/a	69.9	-	69.9	66.1	71.4	3.8	-1.5
Service Line											
		67.4	69.1	63.5	70.1	8.0	67.5	66.1	71.4	1.4	-3.9
General Surgery											
	6-4	60.0	66.1	72.3	62.8	2.8	65.3	66.1	71.4	-0.8	-6.1
	6-5	69.4	71.3	66.9	68.0	-1.4	68.9	66.1	71.4	2.8	-2.5
	6-7	65.8	65.7	60.9	68.6	2.8	65.3	66.1	71.4	-0.8	-6.2
	7-5	67.2	76.0	67.7	65.7	-1.5	69.2	66.1	71.4	3.1	-2.3
Service Line											
		65.6	69.8	67.0	66.3	2.7	67.2	66.1	71.4	1.1	-4.3
Medicine											
	5-5	70.0	63.2	72.7	63.2	-6.8	67.3	66.1	71.4	1.2	-4.1
	5-7	56.3	67.7	69.4	75.0	18.7	67.1	66.1	71.4	1.0	-4.3
	9-5	65.9	65.8	73.2	71.4	5.5	69.1	66.1	71.4	3.0	-2.3
	9-7	69.1	68.1	67.1	63.9	-5.2	67.1	66.1	71.4	1.0	-4.4
Service Line											
		65.3	66.2	70.6	68.4	12.2	67.6	66.1	71.4	1.5	-3.8
Neuro/Rehab											
	6-3	70.0	74.4	71.4	63.0	-7.0	69.7	66.1	71.4	3.6	-1.7
	7-7	59.7	67.1	66.4	65.0	5.3	64.6	66.1	71.4	-1.6	-6.9
	10-6	-	80.0	62.5	78.9	-1.1	73.8	66.1	71.4	7.7	2.4
Service Line											
		64.9	73.8	66.8	69.0	-2.8	68.6	66.1	71.4	2.5	-2.8
Obstetrics											
	10M	57.0	59.8	69.3	61.4	4.4	61.9	66.1	71.4	-4.2	-9.5
	10MS	64.6	68.1	59.0	64.6	0.0	64.1	66.1	71.4	-2.0	-7.3
	11M	63.1	62.4	64.0	62.9	-0.2	63.1	66.1	71.4	-3.0	-8.3
Service Line											
		61.6	63.4	64.1	63.0	4.2	63.0	66.1	71.4	-3.1	-8.4
Oncology											
	8ONC	58.3	67.1	59.8	80.6	22.3	66.5	66.1	71.4	0.3	-5.0
	9-G	68.3	65.0	64.3	64.6	-3.7	65.6	66.1	71.4	-0.5	-5.8
Service Line											
		63.3	66.1	62.1	72.6	18.6	66.0	66.1	71.4	-0.1	-5.4

(-) mean is not displayed

CT Average is average of CT peer group mean for this particular question over four quarters

*This unit replaced 10-7 after 7/12/01 during the fourth quarter

Appendix 2d. Press Ganey Results - ADULT INPATIENT Meals Section Unit Analysis (Mean Scores)
QUESTION 4: "COURTESY OF THE PERSON WHO SERVED YOUR FOOD"
YNHH, FY '01: 10/1/2000-9/30/2001

Service Line	Unit	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Overall Change	Hospital Average	CT Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - CT)
Cardiovascular										
	4-7	84.1	75.8	78.3	79.2	-4.9	79.4	80.6	83.5	-4.2
	5-3	83.1	82.8	85.5	83.2	0.1	83.7	80.6	83.5	0.1
	10-7	78.2	84.0	81.0	77.6	-0.6	80.2	80.6	83.5	-3.3
	5-2*	n/a	n/a	n/a	81.6	-	81.6	80.6	83.5	-1.9
Service Line										
		81.8	80.9	81.6	80.4	-5.4	81.2	80.6	83.5	-2.4
General Surgery										
	6-4	76.3	63.0	76.7	78.1	1.8	73.5	80.6	83.5	-10.0
	6-5	84.2	82.1	77.4	88.5	4.3	83.1	80.6	83.5	-0.5
	6-7	85.5	76.4	75.9	78.4	-7.1	79.1	80.6	83.5	-4.5
	7-5	78.1	84.4	82.4	84.9	6.8	82.5	80.6	83.5	-1.1
Service Line										
		81.0	76.5	78.1	82.5	5.8	79.5	80.6	83.5	-4.0
Medicine										
	5-5	86.1	75.0	81.5	83.8	-2.3	81.6	80.6	83.5	-1.9
	5-7	75.0	84.0	82.9	86.1	11.1	82.0	80.6	83.5	-1.5
	9-5	72.5	75.0	89.3	83.9	11.4	80.2	80.6	83.5	-3.3
	9-7	77.6	78.3	67.9	78.5	0.9	75.6	80.6	83.5	-8.0
Service Line										
		77.8	78.1	80.4	83.1	21.1	79.8	80.6	83.5	-3.7
Neuro/Rehab										
	6-3	84.7	84.5	79.0	77.8	-6.9	81.5	80.6	83.5	-2.0
	7-7	79.7	82.7	74.4	79.3	-0.4	79.0	80.6	83.5	-4.5
	10-6	-	80.4	82.5	92.3	11.9	85.1	80.6	83.5	1.5
Service Line										
		82.2	82.5	78.6	83.1	4.6	81.6	80.6	83.5	-1.9
Obstetrics										
	10M	74.0	71.9	77.1	76.1	2.1	74.8	80.6	83.5	-8.8
	10MS	63.6	80.6	78.9	84.4	20.8	76.9	80.6	83.5	-6.7
	11M	82.1	80.5	82.3	85.2	3.1	82.5	80.6	83.5	-1.0
Service Line										
		73.2	77.7	79.4	81.9	26.0	78.1	80.6	83.5	-5.5
Oncology										
	8ONC	75.0	76.3	90.2	88.9	13.9	82.6	80.6	83.5	-0.9
	9-G	82.4	82.2	77.4	83.6	1.2	81.4	80.6	83.5	-2.1
Service Line										
		78.7	79.3	83.8	86.3	15.1	82.0	80.6	83.5	-1.5

(-) mean is not displayed

CT Average is average of CT peer group mean for this particular question over four quarters

*This unit replaced 10-7 after 7/12/01 during the fourth quarter

Appendix 2e. Press Ganey (PG) Results - PEDIATRIC INPATIENT Meals Section Unit Analysis (Mean Scores)
 QUESTION 1: "IF YOUR CHILD WAS PLACED ON A SPECIAL DIET, HOW WELL WAS IT EXPLAINED TO YOU AND YOUR CHILD?"
 YNHH, FY '01: 10/1/2000-9/30/2001

Unit Unit Name	1st Report (5 months)	2nd Report (2 months)	3rd Report (2 months)	4th Qtr (3 months)	Overall Change	Average	Hospital Average	PG Database Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - PG Avg)
7-2 School Age	80.2	76.7	75.0	n/a	-5.2	77.3	76.5	79.3	0.8	-2.0
7-3 Infants/Toddlers	69.7	84.1	66.7	58.3	-11.4	69.7	76.5	79.3	-6.8	-9.6
7-4 Research	75.0	78.6	75.0	82.4	7.4	77.8	76.5	79.3	1.3	-1.6
7AD Adolescents	85.3	73.1	78.6	81.1	-4.2	79.5	76.5	79.3	3.0	0.2
10-7*	n/a	n/a	n/a	57.1	-	57.1	76.5	79.3	-19.4	-22.2
Pediatric I/P Area	77.6	78.1	73.8	69.7	-13.4	74.8	76.5	79.3	-1.7	-4.5

(-) mean is not displayed
 After 7/12/01 during the fourth quarter, 7-2 went under construction and the following unit changes were made:
 *10-7 was used as 7AD
 7AD was used as 7-2

Appendix 2f. Press Ganey (PG) Results - PEDIATRIC INPATIENT Meals Section Unit Analysis (Mean Scores)
 QUESTION 2: "TEMPERATURE OF THE FOOD (COLD FOODS COLD, HOT FOODS HOT)"
 YNHH, FY '01: 10/1/2000-9/30/2001

Unit Unit Name	1st Report (5 months)	2nd Report (2 months)	3rd Report (2 months)	4th Qtr (3 months)	Overall Change	Average	Hospital Average	PG Database Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - PG Avg)
7-2 School Age	77.3	77.6	74.2	n/a	-3.1	76.4	76.2	75.5	0.1	0.9
7-3 Infants/Toddlers	82.3	73.9	85.0	73.4	-8.9	78.7	76.2	75.5	2.4	3.2
7-4 Research	73.9	72.7	72.0	75.7	1.8	73.6	76.2	75.5	-2.6	-1.9
7AD Adolescents	76.3	70.6	75.0	78.2	1.9	75.0	76.2	75.5	-1.2	-0.5
10-7*	n/a	n/a	n/a	68.8	-	68.8	76.2	75.5	-7.4	-6.7
Pediatric I/P Area	77.5	73.7	76.6	74.0	-8.3	75.4	76.2	75.5	-0.8	-0.1

(-) mean is not displayed

After 7/12/01 during the fourth quarter, 7-2 went under construction and the following unit changes were made:

*10-7 was used as 7AD

7AD was used as 7-2

Appendix 2g. Press Ganey (PG) Results - PEDIATRIC INPATIENT Meals Section Unit Analysis (Mean Scores)
 QUESTION 3: "QUALITY OF THE FOOD"
 YNHH, FY '01: 10/1/2000-9/30/2001

Unit Unit Name	1st Report (5 months)	2nd Report (2 months)	3rd Report (2 months)	4th Qtr (3 months)	Overall Change	Average	Hospital Average	PG Database Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - PG Avg)
7-2 School Age	69.0	70.6	67.2	n/a	-1.8	68.9	68.1	71.9	0.8	-2.9
7-3 Infants/Toddlers	72.6	61.1	75.0	64.0	-8.6	68.2	68.1	71.9	0.1	-3.7
7-4 Research	73.9	68.6	66.0	69.1	-4.8	69.4	68.1	71.9	1.3	-2.5
7AD Adolescents	66.0	66.5	58.7	70.3	4.3	65.4	68.1	71.9	-2.8	-6.5
10-7*	n/a	n/a	n/a	62.5	-	62.5	68.1	71.9	-5.6	-9.4
Pediatric I/P Area	70.4	66.7	66.7	66.5	-10.9	67.6	68.1	71.9	-0.6	-4.3

(-) mean is not displayed

After 7/12/01 during the fourth quarter, 7-2 went under construction and the following unit changes were made:

*10-7 was used as 7AD

7AD was used as 7-2

Appendix 2h. Press Ganey (PG) Results - PEDIATRIC INPATIENT Meals Section Unit Analysis
 QUESTION 4: "AVAILABILITY OF THE KIND OF FOOD YOUR CHILD LIKES TO EAT"
 YNH, FY '01: 10/1/2000-9/30/2001

Unit Name	1st Report (5 months)	2nd Report (2 months)	3rd Report (2 months)	4th Qtr (3 months)	Overall Change	Average	Hospital Average	PG Database Average	Deviation +/- (Avg - Hospital)	Deviation +/- (Avg - PG Avg)
7-2 School Age	73.6	76.6	73.3	n/a	-0.3	74.5	73.2	74.0	1.3	0.5
7-3 Infants/Toddlers	67.9	69.8	79.2	70.7	2.8	71.9	73.2	74.0	-1.3	-2.1
7-4 Research	82.6	75.0	73.1	71.6	-11.0	75.6	73.2	74.0	2.4	1.5
7AD Adolescents	70.1	69.1	67.4	74.4	4.3	70.3	73.2	74.0	-3.0	-3.8
10-7*	n/a	n/a	n/a	72.9	-	72.9	73.2	74.0	-0.3	-1.1
Pediatric I/P Area	73.6	72.6	73.3	72.4	-4.2	73.0	73.2	74.0	-0.2	-1.1

(-) mean is not displayed

After 7/12/01 during the fourth quarter, 7-2 went under construction and the following unit changes were made:

*10-7 was used as 7AD

7AD was used as 7-2

Appendix 3. Internal Organizational Characteristics - YNHH, FY '02
 POTENTIAL SOURCES OF INTERUNIT VARIATION IN PRESS GANEY MEAL SCORES AMONG A SAMPLE OF EIGHT UNITS

Satisfaction Group Units Service Line	LOW		MODERATE				HIGH		
	6-4	9-7	4-7	10M	8ONC	7AD(10-7) Peds	6-3	6-5	All Units (Average)
Gen Surg		Medicine	Cardio	Obst	Onc		Neuro/Reh	Gen Surg	
Overall Devistion in Pt. Sat. Scores ¹	-29.2	-22.9	-18.0	-16.7	-13.7	-10.5	-2.5	0.0	
Volume (Avg Daily Census)	21.07	28.57	20.64	22.64	20.21	18.64	22.57	16.86	21.40
# Beds (Size)	24	34	25	10+18 _(MS) = 28	27+7 _(BMT) = 34	18	24	20	25.88
% Filled	87.8%	84.0%	82.6%	80.9%	59.5%	103.6%	94.0%	84.3%	84.6%
% Turnover	51%	34%	44%	52%	21%	56%	38%	46%	43%
ALOS	5.80	5.85	5.80	3.18	5.85	4.77	6.51	5.80	5.45
Delivery	SP	MK	WP	WP	WP	SP	SP	SP	-
Diet type (per meal)									
Regular	(6) 30%	(4) 14.3%	(7) 31.8%	(19) 79.2%	(9) 37.5%	(8) 42.1%	(8) 40%	(3) 17.6%	36.6%
Modified	(2) 10%	(20) 71.4%	(14) 63.6%	(3) 12.5%	(10) 41.7%	(5) 26.3%	(6) 30%	(8) 47.1%	37.8%
NPO/Liquid	(12) 60%	(4) 14.3%	(1) 4.5%	(2) 8.3%	(5) 20.8%	(6) 31.6%	(6) 30%	(6) 35.3%	25.6%
# Diet Changes	20 _(12/6/01)	15 _(1/23/02)	6 _(12/6/01)	6 _(12/6/01)	9 _(12/6/01)	6 _(12/6/01)	6 _(12/6/01)	11 _(12/7/01)	9.88
# Trays Passed/ # Delivered									
Breakfast (B)	-	13/14	-	16/18	23/25	-	-	11/13	-
Lunch (L)	10/14	14/14	16/16	19/23	25/30	13/15	16/19	12/14	-
Dinner (D)	10/14	-	18/22	-	-	14/19	17/20	-	-
% Trays Passed	71.4%	96.4%	89.5%	85.4%	87.3%	79.4%	84.6%	85.2%	84.9%
# Pts In Room / # Trays Passed	9/10 _(L)	12/13 _(B)	15/16 _(L)	16/16 _(B)	23/23 _(B)	11/13 _(L)	15/16 _(L)	11/11 _(B)	-
(B, L, D): meal	10/10 _(D)	12/14 _(L)	18/18 _(D)	18/19 _(L)	25/25 _(L)	13/14 _(D)	16/17 _(D)	12/12 _(L)	-
% Pts in Room Rec. Meals	95.0%	88.9%	97.1%	97.1%	100.0%	88.9%	93.9%	100.0%	95.1%
Who passes tray?									
Breakfast	-	2 PCAS	-	2 RNS	3 PCAS	-	-	2 PCAS	-
Lunch	2 PCAS	1 PCA	1 PCA	2 PCAS	3 PCAS	PCA, st. nurse	2 PCAS	2 PCAS	-
Dinner	1 PCA	-	2 PCAS	-	-	PCA, EA	2 PCAS	-	-
Timeliness									
wait time (truck del to start)	4	5.5	6.5	8	4.5	20.5	5	4	7.25
tray passing (start to finish)	15	11	19	13.5	12	17	13.5	13	14.25
Total time	19	16.5	25.5	21.5	16.5	37.5	18.5	17	21.50
# Late Trays	28	59	12	27	19	27	30	20	27.75
Breakfast	13 (1.85)	18 (2.57)	5 (7.1)	10 (1.43)	6 (.86)	5 (7.1)	8 (1.14)	8 (1.14)	9.13
Lunch	5 (7.1)	26 (3.71)	2 (2.9)	3 (4.2)	3 (4.3)	4 (5.7)	5 (7.1)	4 (5.7)	6.50
Dinner	10 (1.43)	15 (2.14)	5 (7.1)	14 (2)	10 (1.43)	18 (2.57)	17 (2.43)	8 (1.14)	12.13

¹ From CT comparison group over four meal service items

Appendix 4: DIETS AND CORRESPONDING MENUS TO BE USED

The correct menu color should be written in the bottom right hand side of the kardex card for proper menu heading.

REGULAR – PURPLE MENU

Regular
High protein, high calorie
No added salt
Low lactose
Lactose free
Gluten free
MAOI
VMA
Pediatric patients on 7 AD
Allergy diets
High potassium
Low protein

SOFT – YELLOW MENU

Low fiber
Low residue
Neutropenic
Low bacterial
Bland
Mechanical soft
Pureed

LIQUID – BLUE MENU

Clear liquid
Full liquid

CALCULATED – GREEN MENU

_____ Kcal diabetic (or ADA) diet
Liberal diabetic
Low sodium, diabetic
Diabetics on 7 AD
_____ Kcal for weight loss diet
Low Sodium (2 gm Na, 1.5 gm Na, 1 gm Na)
Typical liver (1 gm Na, 40 gm protein) and variations of liver diet
Liver, diabetic
Diet for hemodialysis = Typical Renal (2 gm Na, 2 gm K, 80 gm protein, 1200 mg phosphorus, 1500 CC FR)
Diet for peritoneal dialysis (3 gm Na, 100 gm protein, 2 gm phosphorus) - may use Regular menu also

Diet for renal insufficiency (2 gm Na, 55 gm protein)
Renal, diabetic
Renal patients 7 AD

HEART HEALTHY – RED MENU

Typical cardiac (2.4 gm Na, low cholesterol, low fat, 3 or less caffeinated beverages per day, no fluid restriction)
Low cholesterol
Low fat
Low cholesterol and/or low fat with No added salt
Cardiac, diabetic
Cardiac, low fat, and/or low cholesterol with a fluid restriction
Renal, cardiac

PEDIATRIC MENU – PEACH MENU

Patients 1 – 13 years

Appendix 5. PATIENT CARE UNIT FOOD AND NUTRITION SERVICES OVERVIEW AND PERFORMANCE EXPECTATIONS

Refer to the Department of Food and Nutritional Services Meal Service Fact Sheet located at the Nursing Stations for Dietary hours of operation, phone and beeper numbers

Department of Food and Nutritional Services Role on the Patient Care Units:

- ◆ Makes sure food trucks, dirty tray trucks, formulas, box lunches, and bulk nourishments are delivered.
- ◆ Makes sure food trucks and dirty tray trucks are picked up in East Pavilion. *Materials Management is responsible for deliveries and pick-ups in the South and West Pavilions as well as Winchester One/Child Psych.*
- ◆ Delivers menus on breakfast trays and trays sent to new admissions.
- ◆ Dietetic Technicians:
 - ◆ Are the contact individuals for diet changes, menus and meal service related issues.
 - ◆ Pick up menus from patients, or call patients for their selections.
 - ◆ Review all diet orders and process menus for meal service.
 - ◆ Interview/visit patients for food preferences, intolerances and concerns.
- ◆ Food Service Associates:
 - ◆ Deliver and pick up food trucks at mealtime.
 - ◆ Deliver late trays and individual nourishments to patients.
- ◆ Clinical Dietitians:
 - ◆ Respond to nutrition consults, evaluate patients for nutrition risk and/or diet concerns, adjust diet orders, make recommendations for tube feedings and intravenous nutrition, and provide nutrition education to patients/family and staff as needed.

Business Associate Meal Service Expectations

- ◆ Make sure there is a Meal Service Fact Sheet clearly posted at the nursing station.
- ◆ Beep the dietetic technician (days) or call the Diet Communication Center (evenings/nights) for patient meal requests.
- ◆ Make mealtime announcement when food truck arrives so patients and staff can prepare for meal service.
- ◆ Have staff check food trucks for patient's tray or unused trays before calling the kitchen for a new tray.
- ◆ Beep the Unit Service Manager for after hours meal service.

Patient Care Associate Meal Service Expectations

- ◆ Clear off bedside stands as needed. Wash hands after removing urinals, bedpans, or emesis basins.
- ◆ Print out CCSS Diet Order Listing to make sure the correct patient gets the correct diet and tray.

Appendix 5(continued). PATIENT CARE UNIT FOOD AND NUTRITION SERVICES OVERVIEW AND PERFORMANCE EXPECTATIONS

- ◆ Pass meal trays within five minutes of food truck arrival. Check with RN before passing a tray without diet orders or a tray marked “HOLD” on the menu, to a patient. Do not pass trays to patients who are NPO for tests or surgery.
- ◆ Remove folded menu from patient tray so that patient may select meals for the next day. DO NOT PUT THE MENU BACK ON THE TRAY.
- ◆ Assist patients with meal service. Remove lids. Open cartons and condiment packages as needed. Cut up food and feed if necessary.
- ◆ Use extra trays or trays for discharged patients for new admissions or patients with late diet changes.
- ◆ Ask Business Associate to beep the dietetic technician (days) or to call the Diet Communication Center (evenings/early a.m.) for additional patient trays or food items as needed.
- ◆ Within 1 hour of delivery, collect trays and put in dirty tray trucks. Move truck out to designated pick up area.
- ◆ Check late tray rack and put those dirty trays in trucks as well.

Environmental Associate Meal Service and Bulk Nourishment Expectations

- ◆ Assist patient care associate with tray passing and collecting as requested.
- ◆ Check late tray rack and put dirty trays in dirty tray trucks.
- ◆ Inventory and order bulk nourishments daily at the designated time following established par levels.
- ◆ Properly store bulk nourishments within 15 minutes of delivery.
- ◆ Rotate stock. Put new food items BEHIND older items.
- ◆ Check all dated food items and discard on the expiration date.
- ◆ Record refrigerator temperature on temperature log. If out of safety zone, contact Engineering.

Appendix 6. Unit Observation Form For the Meal Service Tray Passing Process, YNHH

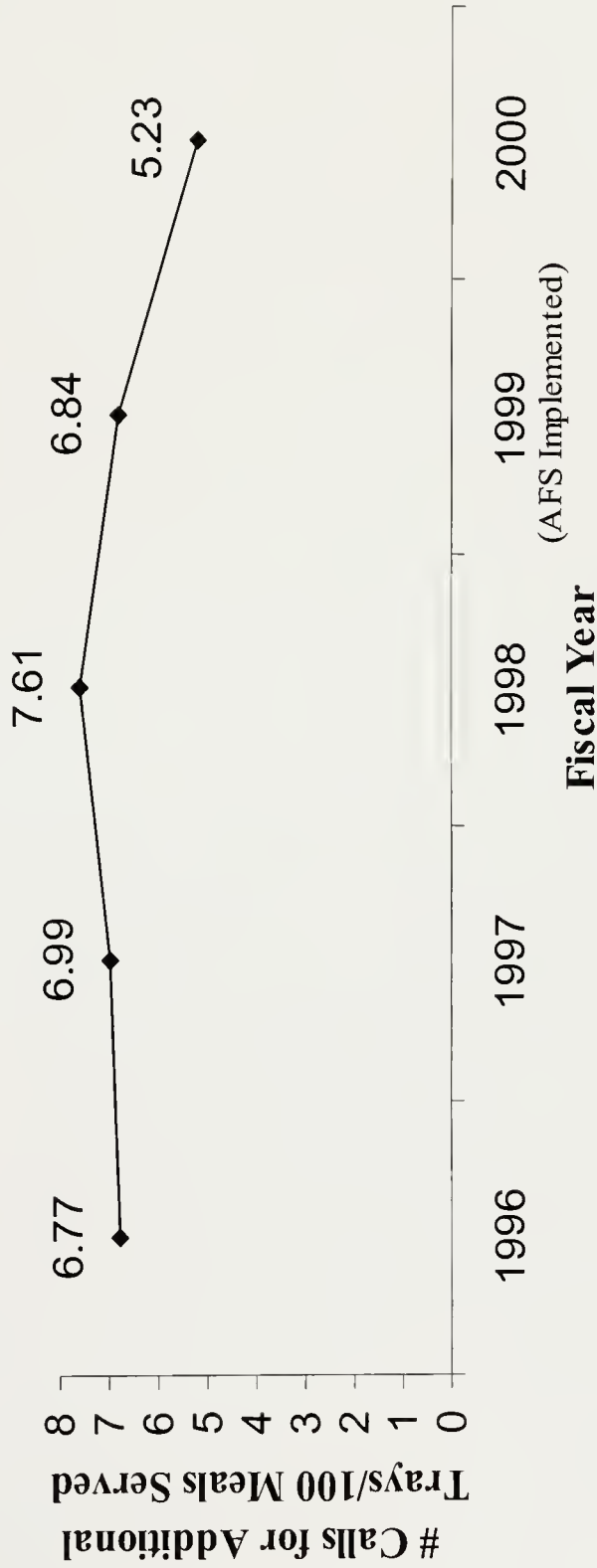
UNIT No./Service Line _____

Date: _____ Day: _____ Truck delivery time _____ Wait time _____
 Meal (B, L, D)/Time Start: _____ End: _____ Tray passing time _____
 No. trays in truck (delivered): _____ Extras: _____
 No. trays left in truck (not delivered): _____ Person(s) passing trays _____

Tray #	Pt. in room?	If N, Reason	Tray delivered?	If N, Reason	Check Order?	Observations
1	Y / N		Y / N		Y / N	
2	Y / N		Y / N		Y / N	
3	Y / N		Y / N		Y / N	
4	Y / N		Y / N		Y / N	
5	Y / N		Y / N		Y / N	
6	Y / N		Y / N		Y / N	
7	Y / N		Y / N		Y / N	
8	Y / N		Y / N		Y / N	
9	Y / N		Y / N		Y / N	
10	Y / N		Y / N		Y / N	
11	Y / N		Y / N		Y / N	
12	Y / N		Y / N		Y / N	
13	Y / N		Y / N		Y / N	
14	Y / N		Y / N		Y / N	
15	Y / N		Y / N		Y / N	
16	Y / N		Y / N		Y / N	
17	Y / N		Y / N		Y / N	
18	Y / N		Y / N		Y / N	
19	Y / N		Y / N		Y / N	
20	Y / N		Y / N		Y / N	

Comments: _____

Appendix 7. Late Trays Trend Between 1996-2000: **YNHH, Department of Food & Nutrition**



Source: Food and Nutrition Improvement Council, Quality Report Data

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